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Editors

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Psychological Distress during the COVID-19 Pandemic in Nursing Students: A Mixed-methods Study

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Abstract: During such an unprecedented time of the largest public health crisis, the COVID-19 pandemic, nursing students are of the utmost concern regarding their psychological and physical well-being. It is important to identify and establish influences and associations within multilevel factors, including the effects of the COVID-19 pandemic on psychological distress among nursing students. The research in this study utilized a mixed-methods, convergent study design. The study population included a convenience sample of undergraduate nursing students from Southeastern U.S. with 202 students completing the quantitative survey and 11 students participating in the qualitative follow-up interview surveys. Statistical tests were performed and identified the effects of independent variables on psychological distress. Coding and qualitative content analysis were performed and identified overarching themes within participants' interviews. The findings are significant, specifically regarding contributing factors of nursing students' psychological distress, which will help to improve learning in the academic environment.

Keywords: Nursing education, nursing students, pandemic, psychological distress.

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Introduction

The high exposures to interpersonal, economic, and academic demands contribute to the major health concerns, which include a potential risk for psychological distress (Mitchell, 2018). Achievement of educational success among nursing students is directly affected to the high exposures of anxiety and depression from experiences within the program. Working relationships and achieving academic success are imperative to positive student outcomes within the nursing program. The purpose of this study is to identify and establish influences and associations within multilevel factors, including the effects of the COVID-19 pandemic on psychological distress in nursing students.

Background

It has been recognized and well established that nursing students are among those individuals that are highly susceptible to psychological distress, which is associated with the many stressors endured during nursing school (Tagher & Robinson, 2016). Research has found that in comparison within healthcare disciplines and programs, nursing students tend to experience a higher severity of anxiety and stress (Turner & McCarthy, 2017). The challenges that come along with nursing programs, which include the stressors of having to simultaneously balance life issues along with didactic and clinical courses, have the potential to exacerbate psychological distress (Tagher, 2017). Unfortunately, the relentless exposure to stressors may lead to a multitude of negative outcomes and effects on nursing students (Tagher, 2017).

Decreased academic performance can be seen in nursing students as a result of multilevel stressors, which can affect coping abilities, problem-solving abilities, and overall health (Tagher & Robinson, 2016). The COVID-19 Pandemic has thrown yet another curve ball in the challenges that nursing students already face. In efforts to prevent the further transmission of COVID-19, there was a rapid switch to online learning that was thrust upon nursing students who were already barely adapting to face-to-face courses. The rapid shift in the way nursing courses are being conducted as a response to the COVID-19 Pandemic can overwhelm nursing students even further, leading to negative consequences from unknown stressors.

Research has noted that psychological issues and problems are pervasive among nursing students (Thompson et al., 2019). They are also noted to rarely seek professional psychological help, potentially bypassing the opportunity to prevent further detrimental effects (Pumpuang et al., 2018). Academic experiences and practices within the nursing program may lead to challenges associated with psychological distress, which can negatively affect nursing students' mental well-being (Beanlands et al., 2019). In addition to the psychological stressors that nursing students already face, events resulting from the COVID-19 pandemic have influenced the many aspects of nursing education, including nursing students' mental and physical well-being, coping abilities, and perceptions of their educational environment (Beanlands et al., 2019). Limited knowledge and information associated with how the COVID-19 pandemic has truly affected nursing students has been noted. This limitation in research has highlighted the need to recognize and examine the occurrence of psychological distress and associated stressors among nursing students during such an unusually challenging time.

Method

A convenience sample was selected from southeastern nursing programs in the U.S. "The Southeastern United States include Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Maryland, Virginia, and West Virginia" (World Population Review, 2020, para 1). Inclusion criteria for participants included participants the age of 18 years or older and the admission to a nursing program as a Bachelor of Science in Nursing (BSN) student. BSN students did not hold any previous nursing licenses and Registered Nurse (RN) to BSN students were excluded.

Descriptive statistical analysis, bivariate analysis, multivariate multiple linear regression, and binary logistics regression analysis were performed to determine whether there were any correlational relationships between the outcome variable, psychological distress, and independent variables. Independent variables included: Socio-demographic variables such as age, gender, region, and employment status as well as nursing students' general health, stress, anxiety, educational environment, etc. The study assumed 13 independent variables in analyses. Table 1 provides an overview of study variables and corresponding measurement tools.

Table 1. Overview of Variables and Corresponding Measurement Tools

Variable	Instrument	Independent or Dependent	# of Questions or Items
Age	Demographics	Independent	1
Ethnicity	Demographics	Independent	1
Gender	Demographics	Independent	1
Location/Year	Demographics	Independent	1
Employment status	Demographics	Independent	1
Marital status	Demographics	Independent	1
Social support	Single-item indicator	Independent	1
Coping	Single-item indicator	Independent	1
COVID-19 stress	Single-item indicator	Independent	1
COVID-19 anxiety	Single-item indicator	Independent	1
General health	Single-item indicator	Independent	1
Perceived stress	PSS-4	Independent	4
Educational environment	DREEM-12	Independent	12
Psychological distress	K6	Dependent	6

A convergent, mixed-methods approach utilizing multiple measurements, including, single item indicator questions, the Kessler Psychological Distress Scale (K6), the Perceived Stress Scale (PSS-4), the Dundee Ready Education Environment Measure (DREEM), demographics survey tool, and phone interviews were used in data collection within the desired population. The measurement tools utilized Likert-type scale questions and self-reporting. Quantitative Data were collected over a 4-week period. Qualitative data were collected over a 4-week period shortly after quantitative data were collected. The use of a descriptive qualitative approach and specifically a directed content analysis approach was used to guide questions for the follow-up phone or zoom interviews. The interviews lasted approximately 12 minutes and participants were prompted to speak about their experience during the COVID-19 pandemic using the following open-ended questions:

1. In what ways has the COVID-19 pandemic changed your academic performance?
2. What are some stressors or things that have caused you stress or psychological stress during your time in nursing school?
3. What things have you done to cope with stressors caused as a result of the COVID-19 pandemic?
4. During the COVID-19 pandemic, what are some stressors or things that have caused you anxiety?

during your time in nursing school?

5. What things have you done to cope with anxiety caused as a result of the COVID-19 pandemic?
6. How has your social support system, such as family and friends, and the nursing school, helped you progress through the nursing program?
7. What could your family and friends and nursing school have done differently to support your progress through the nursing program?
8. While you are attending nursing school, did you have any concerns that affected your physical or mental health during the COVID-19 pandemic?

Results

Demographic Information

A total of 202 participants completed the demographics section of the survey. Most of the participants were young adults with a mean age of 22 years ($SD=4.38$). Regarding race, the highest percentage of participants selected white ($n=160$, 79%); Participants that selected African American had a selection of 28 (14%). Participants that selected others accounted for 14 (7%). The selection of others included races such as Native Hawaiian, Pacific Islander, Asian, Alaskan Native and American Indian. This was noted to be the smallest portion of the sample. The majority of the students were female at 86%, and the other 28 (14%) participants were male. Participants had the opportunity to select multiple options for marital status. Regarding marital status, the highest percentage of participants selected single 193 (95%); participants that selected married had a selection of 9 (5%) and participants that selected either widowed or divorced had a selection of 1 (1%) each. Regarding employment, the highest percentage of participants were not working 129 (64%); however, some participants reported that they worked part-time ($n=70$, 35%). Very few participants reported working ($n=3$, 2%) (see Table 2 Descriptive Statistics of Variables for the complete demographic information on the data.).

Bivariate analysis was conducted between psychological distress and the following demographic variables, which can be seen in Table 3 and Table 4: Race, sex, employment status, age, and marital status. The analysis intends to determine whether a statistical association exists between psychological distress and the demographic variables, thus utilizing statistically significant variables for multivariate analyses later. From the results in Table 3 and Table 4 consisting of the bivariate analysis, we observe that marital status and psychological status are related to the outcome variable as the p-value is less than the significance level of 0.05.

A multiple linear regression analysis was conducted between psychological distress and demographic variables as identified in Table 5. The intention of the analysis is to predict multiple outcome variables utilizing one or more independent variables. Evidence from Model 1 in Table 5 does not show a linear relationship among the variables describing demographics and psychological distress at a significance level of 0.05. From Model 2 in Table 5, there does exist a linear relationship among the variables, which include the PSS4 and DREEM12 scale and the dependent variable, psychological distress. We can conclude that there is a statistically significant association between the PSS4 and DREEM12 scale with a p-value of less than or equal to the significance level

of 0.05. If one score increases in the DREEM12 scale holding the PSS4 scale, the psychological distress score will increase around 2.6 points. If one score increases in the PSS4 scale holding the DREEM12 scale, the psychological distress score will decrease almost 6 most. The R-squared for model 2 = 0.230. R-squared of a multiple regression model explains how close the data are to the fitted regression line so, within this model, only 23% of the variation in psychological distress can be explained by the independent variables of the PSS4 and DREEM12 scale.

A logistic regression analysis was conducted between psychological distress and the 5 single-item indicator questions to obtain an odds ratio. Psychological distress was converted into a binomial response variable; thus, the logistic regression analysis is appropriate. Odds ratios are obtained between one or more explanatory variables and a binomial response variable within a logistic regression analysis (Sperandei, 2014). As identified in Table 6, the overall test results are statistically significant, which means a nonlinear relationship is identified between psychological distress and other independent variables ($\chi^2 = 65.004$, $df = 3$, $p < 0.001$). Three independent variables are statistically significant with psychological distress. With an odds ratio greater than 1, there is a positive correlation identified among stress and psychological distress. Should the stress level increases, there will be more likely to be distressed. For every 1 unit increase in stress, the predicating odds are changing by a factor of 1.648.

If a randomly selected participant thinks he or she gets more social support during nursing school, there are around 65% fewer odds to be distressed. If a randomly selected participant thinks he or she copes well, there are about 48% less odds to be distressed. The goodness of fit of the model was measured by Hosmer and Lemeshow test. The combination of evaluating a statistical model and establishing the Hosmer-Lemeshow goodness of fit test is imperative to assessing goodness of a fit within a logistic regression model (Fagerland & Hosmer, 2012). A larger p-value means that the model is a good fit so we can determine that the logistic regression model is a very good fit with a chi-square test statistic of 3.199 and a p-value of 0.921.

Table 2. Descriptive Statistics of Variables

Variable	Frequency (%)	Mean (SD)
Race		
Caucasian	160 (79.2%)	
African American	28 (13.9%)	
Others	14 (6.9%)	
Gender		
Male	28 (13.9%)	
Female	174 (86.1%)	
Employment		
Working (full-time)	3 (1.5%)	
Working (part-time)	70 (34.7%)	
Not Working	129 (63.9%)	

Marital Status	
Married	9 (4.5%)
Widowed	1 (0.5%)
Divorced	1 (0.5%)
Single	191 (94.6%)
<hr/>	
Age	22.61 (4.38)
<hr/>	
DREEM	
Very Poor	1 (0.5%)
Plenty of Problems	6 (3.0%)
More Positive than Negative	56 (27.7%)
Excellent	129 (63.9%)
<hr/>	
Perceived Stress (PSS4)	12.86 (1.59)
<hr/>	
Psychological Distress (K6)	
Well	107 (53.0%)
Mild Mental Disorder	51 (25.2%)
Moderate Mental Disorder	33 (13.6%)
Severe Mental Disorder	3 (1.5%)
<hr/>	
I have adequate social support during nursing school	
Strongly Disagree	3 (1.5%)
Disagree	14 (6.9%)
Unsure	13 (6.4%)
Agree	102 (50.5%)
Strongly Agree	66 (32.7%)
<hr/>	
I am able to cope well in nursing school	
Strongly Disagree	6 (3.0%)
Disagree	31 (15.3%)
Unsure	48 (23.8%)
Agree	93 (46.0%)
Strongly Agree	20 (9.9%)
<hr/>	
I have experienced stress related to COVID-19 during nursing school related to COVID-19	
Strongly Disagree	3 (1.5%)
Disagree	9 (4.5%)
Unsure	5 (2.5%)
Agree	63 (31.2%)
Strongly Agree	118 (58.4%)
<hr/>	
I have experienced anxiety related to COVID-19 during nursing school	

Strongly Disagree	1 (0.5%)
Disagree	8 (4.0%)
Unsure	37 (18.3%)
Agree	65 (32.2%)
Strongly Agree	87 (43.1%)
<hr/>	
General Health	
Strongly Disagree	0 (0.0%)
Disagree	7 (3.5%)
Unsure	46 (22.8%)
Agree	78 (38.6%)
Strongly Agree	67 33.2%)

Table 3. Bivariate Analyses between Psychological Distress and Independent Variables.

VARIABLE	INDEPENDENT VARIABLE	TEST	TEST STATISTIC	P
Psychological distress	Race	χ^2	2.191	0.901
	Sex	χ^2	0.564	0.905
	Employment status	χ^2	8.611	0.197
	Marital status	χ^2	13.086	< 0.05
	Age	F	1.488	0.120
	DREEM -12	MH*	5.814	< 0.05
	PSS4	F	3.4661	< 0.05

* Mantel Haenszel Chi-square test was performed because both variables are ordinal scale variables.

Table 4. Bivariate Analyses with Outcome Variable, Psychological Distress (Dichotomous)

Variable	Distress n (%) /mean (SD)		Test Statistic	P
	Yes	No		
<hr/>				
Gender				
Male	12 (13.8%)	16 (15.0%)	$\chi^2 = 0.052$	0.082
Female	75 (86.2%)	91 (85.0%)		
Age	22.88 (5.75)	22.24 (2.44)	$t = -1.024$	0.307
<hr/>				
Caucasian				
Yes	70 (80.5%)	82 (76.6%)	$\chi^2 = 0.414$	0.520
No	17 (19.5%)	25 (23.4%)		

Married				
Yes	5 (5.7%)	4 (3.7%)	$\chi^2 = 0.438$	0.508
No	82 (94.3%)	103 (96.3%)		
Employment				
Yes	27 (31.0%)	44 (41.1%)	$\chi^2 = 2.104$	0.147
No	60 (69.0%)	63 (58.9%)		
Perceived Stress (PSS4)	12.23 (1.73)	13.38 (1.25)	$t = 5.437^*$	< .001
DREEM				
Very Poor	0 (0.0%)	1 (1.0%)	Spearman γ = 0.162	0.024
Plenty of Problems	0 (0.0%)	6 (5.7%)		
More Positive Than Negative	22 (25.3%)	34 (32.4%)		
Excellent	65 (74.7%)	64 (61.0%)		
Social Support				
Strongly Disagree	0 (0.0%)	3 (2.8%)	$\chi^2 = 25.07$	< .001
Disagree	3 (3.4%)	10 (9.3%)		
Unsure	1 (1.1%)	12 (11.2%)		
Agree	40 (46.0%)	60 (56.1%)		
Strongly Agree	43 (49.4%)	22 (20.6%)		
Coping				
Strongly Disagree	2 (2.3%)	4 (3.7%)	$\chi^2 = 35.91$	< .001
Disagree	5 (5.7%)	25 (23.4%)		
Unsure	13 (14.9%)	35 (32.7%)		
Agree	49 (56.3%)	41 (38.3%)		
Strongly Agree	18 (20.7%)	2 (1.9%)		
Stress-related to COVID-19				
Strongly Disagree	2 (2.3%)	1 (0.9%)	$\chi^2 = 12.58$	0.014
Disagree	5 (5.7%)	4 (3.7%)		
Unsure	4 (4.6%)	1 (0.9%)		
Agree	36 (41.4%)	26 (24.3%)		
Strongly Agree	40 (46.0%)	75 (70.1%)		
Anxiety-related to COVID-19				
Strongly Disagree	1 (2.3%)	0 (0.0%)	$\chi^2 = 5.71$	0.222
Disagree	5 (5.7%)	3 (2.8%)		
Unsure	16 (18.4%)	20 (18.7%)		
Agree	33 (37.9%)	30 (24.3%)		
Strongly Agree	32 (36.8%)	54 (70.1%)		

General Health				
Strongly Disagree	0 (0.0%)	0 (0.0%)	$\chi^2 = 20.95$	< .001
Disagree	2 (2.3%)	4 (3.7%)		
Unsure	12 (13.8%)	34 (31.8%)		
Agree	29 (33.3%)	47 (43.9%)		
Strongly Agree	44 (50.6%)	22 (20.6%)		

* Satterthwaite t-test was done due to unequal variances

Table 5. Multiple Regression Model

OUTCOME VARIABLE	MODEL	T	P	F (p)
Psychological distress	Model1			
	Race	-0.743	0.458	0.989 (0.420)
	Sex	-0.841	0.401	
	Employment status	0.608	0.544	
	Marital status	-0.052	0.959	
	Age	1.55	0.123	
Psychological distress	Model2			
	PSS4	-5.90	0.000*	7.583 (0.000) *
	DREEM-12	2.59	0.004*	
	Race	-1.06	0.288	
	Age	1.48	0.138	
	Sex	-0.35	0.724	
	Marital status	-0.76	0.447	
	Employment status	0.125	0.901	

*Statistically significant at 0.05 significance level. R² for model 2= 0.230

Table 6. Logistic Regression Analyses with Single Item Indicators

Variable	B (p)	Odds Ratio (CL)
Social Support	- 0.812 (0.002)	0.444 (0.265 – 0.744)
Coping	- 0.660 (0.002)	0.517 (0.342 – 0.781)
Stress	0.500 (0.006)	1.648 (1.150 – 2.362)

Follow-up interviews were conducted on 11 participants regarding qualitative questions exploring the following variables during the COVID-19 pandemic: Academic performance, stress, coping, anxiety, social support,

physical, and mental health. Coding and qualitative content analysis were used to identify overarching themes within the interviews. Each interview was carefully analyzed, and the following 12 codes resulted from the analysis of the participant’s responses: Online learning, workload, finances, experience, breaks, time, unknown, support, encouragement, unchanged, communication, and transmission.

Integration of the quantitative and qualitative data were conducted in efforts to gain and develop an understanding and validation of the results (Johnson et al., 2007) of psychological distress in nursing students during the COVID-19 pandemic. Figure 1 depicts the meta-inferences drawn from the quantitative and qualitative data results. An enhancing approach was used as an integration strategy for analyzing and interpreting both quantitative and qualitative data and to derive meta-inferences or conclusions. Integration of qualitative and quantitative data ensued, and four major meta-inferences were determined. During the COVID-19 pandemic, we can conclude that disruptions in nursing student’s educational environment such as online learning, workload, lack of communication, and financial issues can increase psychological distress; Social support in nursing students can increase coping, which decreases psychological distress; Nursing students’ coping, such as time management and breaks can decrease stress leading to decreased psychological distress; and COVID-19 stress, concerns, and isolation in nursing students can increase psychological distress.

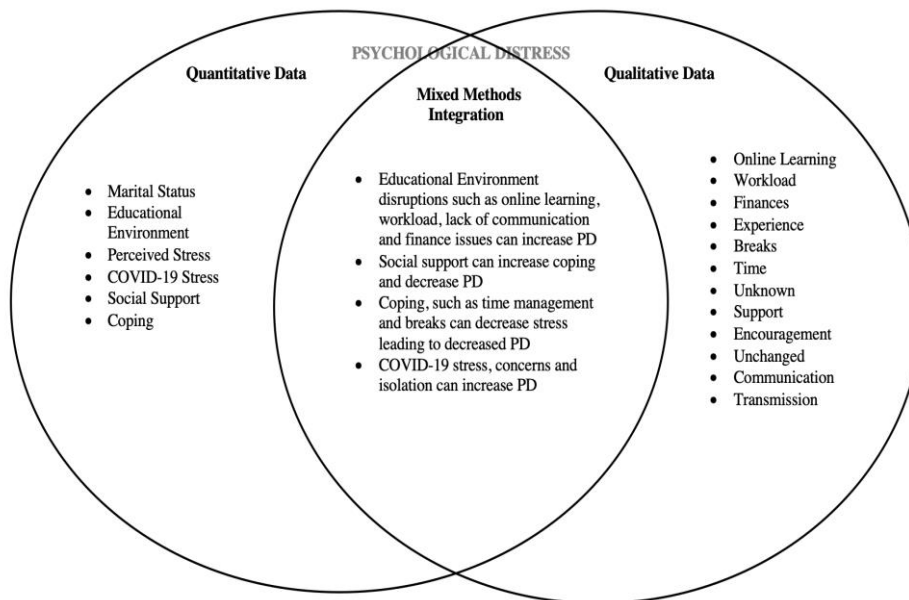


Figure 1. Mixed-methods Integration Results

Discussion

The study revealed multiple limitations and delimitations. One delimitation found was that the study was restricted to only nursing students attending a BSN program in Southeastern US. This delimitation of the study may not generalize to other nursing students from different geographical areas and other different types of nursing programs. Primarily female students were found to be another limitation within the study. Within the

study results, approximately 86% of the participants were female. This limitation of the study may not generalize to other BSN programs that include more male students. Another limitation of the study included a time frame of 8 weeks where the data was cross-sectionally collected and may not include such in-depth responses and discoveries that a longitudinal study may encounter. The study was limited by the honesty and clarity of the participants' responses on online questionnaires and phone interviews. It is assumed that all of the participants answered truthfully and accurately, but there is always a potential for dishonest respondents. Even with all the controls and measures taken in recruiting and motivating participants, dishonest respondents can occasionally provide dishonest answers (Zijlstra et al., 2007).

Conclusion

Practice recommendations include preventative measures such as screening tools or surveying to monitor the potential for psychological distress in nursing students. These screening tools can be incorporated within nursing programs and conducted throughout each course. Educators are often the first line of defense for their students (Barlie, 2021) and can implement these measures within their courses and conduct them throughout the semester. A simple questionnaire asking open-ended questions about their mental well-being can help to open up communication about mental health issues. The importance of nursing faculty being able to recognize mental health problems amongst nursing students should also be highlighted. Nursing educators should be provided with tools to recognize signs of developing psychological distress and given opportunities around the awareness and management of mental health crises which, include risk for suicide (Barlie, 2021). Providing nursing educators with the appropriate tools can be established by faculty training and education. NAMI (2021) provides resources to educators that include support for student wellness. Through NAMI, educators are prompted to look for the following amongst their students; increasingly more socially withdrawn, missing multiple days of school, falling behind academically, and expressing interest in harming themselves. Resources on how to appropriately respond to these situations should also be provided to nursing educators.

Other recommendations include incorporating content into the nursing curriculum to address psychological distress such as burnout and self-care. Faculty should work to promote mental health awareness with their students. Nurse educators that incorporate self-care into the curriculum can improve nursing student's self-awareness of the importance of reduction in stress while they endure the challenges of the rigorous workload within the program (Green, 2019). Teaching self-care behaviors that are proactive will contribute to maintaining a safe practice in their clinical environments (Green, 2019).

Nursing education and faculty are encouraged to uncover those students with an increased risk for exposure to difficulties and risks to their academic success. These precautions are ongoing challenges as a result of the COVID-19 pandemic (Gaffney et al., 2021) and will be necessary for efforts to ensure that our future nurses are appropriately equipped to face the challenges in health care that the pandemic has caused. Knowing the factors of psychological distress in nursing students during the COVID-19 pandemic can help faculty to better prepare nursing students and create an educational environment that accommodates a new type of patient care.

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Leveraging Neuroscience as a Tool to Advance Architecture Pedagogy

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Abstract: The brain alone is a complex organ in which all sensory, intellectual, emotional, and intuitive perceptions take place. Today, one of the research challenges in teaching-learning science is the answer to the question of how much the application of findings from neuroscience studies on learning can be effective in improving the quality of education. Where are the overlaps between the language of neuroscience and the science of teaching-learning? While previous teachings have emphasized the importance of schemas or mental formats as a new learning infrastructure, cognitive neuroscience looks at how knowledge, insight, and experience are processed in the brain and how neural connections in the brain provide new learning. The information encoded in the hippocampus can form schemas reliably in institutionalized neocortical networks. How can these mechanisms be used to improve education, especially architecture education? The current insights from the basic and applied research of cognitive neuroscience, cognitive psychology, and teaching-learning science research promise a change in educating architects. This article introduces the commonalities of neuroscience, cognitive studies, and architectural education.

Keywords: Cognitive neuroscience, Architecture education, Schema, Teaching, Learning

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Introduction

Improving education is one of the most important strategic priorities of many countries. Because the brain is a major organ involved in learning, generating and developing knowledge about brain function can improve educational programs. Cognitive neuroscience is proliferating, and based on its findings, the scientific approach to classroom instruction can move away from the current path (Torabi Nami et al.,2020; Tibke, 2019). On the other hand, many reasons have been raised to explain the relationship between cognitive neuroscience and education and learning (Torabi Nami et al.,2020).To understand how teachers change the brain, we need to begin with a reasonably new understanding of learning biology. The brain is an experience-dependent experience throughout our lives. The cerebrum, the most significant portion of our brain, finds humans to adapt to the world around us, which is described by the scientific term neuroplasticity (Burns, 2019).

The multimedia revolution has also dramatically affected a wide range of human learning (Lazar et al., 2020; Mayes, 2018). The structured growth of the new generation's mind largely depends on exploiting new technologies (Small et al., 2009). Using advanced technologies, such as brain imaging, information about brain functions has multiplied in recent years (van Niekerk, 2017; Sousa, 2001). The brain is a complex organ where all sensory, intellectual, emotional, and intuitive perceptions occur. Neuroscience has used electrophysiological tools and brain imaging techniques to understand how knowledge, insight, and experience are processed in the mind-brain and the neural pathways involved (Goswami, 2006).

Researchers' findings have brought new insights into memory, attention, alertness, thinking, excitement, motivation, and learning (Wolfe, 2010; Varma, 2008). Neuroscience has had a significant impact on areas such as psychology. It has paved the way for developing disciplines such as cognitive neuroscience, evolutionary cognitive psychology, social cognition, and social neuroscience. Furthermore, the application of neuroscience in educational sciences is more widespread than in other fields (Jang et al., 2021) but has yet to be in architecture education. As the architectural design studio culture is based on old-century traditions, it should be rethought based on an inclusive learning environment to diversify the profession (Pilat, 2022).

Today's students cannot be treated as older generations and have their own needs and demands. The brain of people change over time, and people become altered through their life and historical experiences. The cybernetic era has changed the human brain drastically. The presence of different social media, as well as the multimedia revolution, have had a high impact on the way people learn. Taking a look at Marist's mindset 2026 as a cultural touchstone proves why today's learners are unique ("The 2022 Marist Mindset List for the Class of 2026").

A new field of study called educational neuroscience combines cognitive neuroscience methods and exceptionally functional imaging of the brain with educational sciences and tries to study teaching and learning issues scientifically (Varma et al., 2008; Dougherty et al., 2018), (Pinho et al., 2020; Rodgers et al., 2020). The subjects include the interaction of neuroscience and educational sciences, Mind, Brain, Education (MBE) and learning about the role of schema, individuals' memory, and learning system, and applying Evidence-Based Education (EBE) and Brain Compatible Educational Methods that are covered in the current research. Healthcare has been using evidence-based design (EBD) for years. People for designing places for to feel better upon visiting them. Even though a school building is not a place most people seek to heal, there are ways to make an educational space feel healing. They use research-based design benefits, health, and satisfaction (Moser, 2014 #11).

Incontrovertible biological evidence about the mental and physical affect of the can be tracked. Complex data can be delivered and measured down to cortisol levels to show how different built environments engender biochemical changes in our bodies and can harm human health, both mentally and physically. This means we can no longer teach future architects that the abstract part is design's unique central organizing feature; we need to put people, biology, and human functions at the center of the thinking. There are no more limitations, and the explosion of scientific and tech innovation has produced biometric tools for uncovering people's thoughts,

feelings, and emotional responses to build conditions. Architectural educators can no longer ignore this evidence.

Today architects face a unique opportunity to reshape the environment according to biological nature and use evidence-based design to build what people want to be in and experience. With new biometric tools, post-occupancy evaluations are facilitated by asking people where they feel at their best, and this should be referred to and taught in architectural schools (Kim, 2020).

The relationship between neuroscience studies, teaching-learning science, and architecture education

To understand the process of information processing in the brain and its neural exchanges, it is necessary to have the requisite theoretical information about brain structures related to learning and memory. The role of cellular and network mechanisms that are somehow involved in memory has been clearly stated in some studies (van Kesteren et al., 2010; Huber et al., 2014; Gilboa et al., 2017). For example, the events and semantic memory structures include the medial temporal lobe, the temporal cortex, and the frontal cortex (Dolmans, 2005). The medial temporal lobe, which surrounds the hippocampus, plays a vital role in memory storage. The hippocampus is also involved in coding and retrieving memory (Miyashita, 2004; Osada et al., 2008). Of course, the ultimate repository of explicit memory appears to be the neocortex (Miyashita, 2004; Osada et al., 2008). However, the temporal and spatial interaction between environmental stimuli and the superior cortex of the brain, which forms the basis of event memory, depends on the function of the neural circuits in the temporal lobe (Miyashita, 2004; Osada et al., 2008). These areas are activated in two processes when recalling and in connection with retrieving the contents of memory. One is the active recovery current that flows from the frontal cortex downwards, and the other is the retrograde flow from the medial temporal lobe for automatic recovery of the current flow from the frontal lobe. The presence of these pathways, especially the medial temporal flow, has been shown in monkeys (Miyashita, 2004; Osada et al., 2008; Wang et al., 2010).

One of the fascinating challenges in learning studies in neuroscience is to show the interactions and hierarchies of areas of the cerebral cortex and to analyze these connections using functional Magnetic Resonance Imaging (fMRI). Functional magnetic resonance imaging, one of the valuable practical tools in the study of cognitive neuroscience, can also have many applications in research related to human learning. There are various methods of fMRI imaging in neuroscience and cognitive studies (Morris, 2006; Morris et al., 2003). The strategy of a functional magnetic resonance imaging study is to create an action in the brain and to observe and examine the brain's response to that action. Brain activity depends on the blood oxygen level in the target area, called Blood Oxygen Level Detection (BOLD). The basis of BOLD is the reaction in the magnetic field and the creation of an analytical image sensitive to changes in the oxygen level of hemoglobin. Areas of the brain with high oxygen concentrations produce more signals than areas with less oxygen. The practical application of this process is a kind of indirect measurement of neuronal activity at the moment when a person performs a specific cognitive task. BOLD sensitivity is directly dependent on the strength of the magnetic field. Imaging is repeated

every one to three seconds, and the brightness of that area of the brain after statistical analysis indicates the amount of neural activity (Miyashita, 2004). Other technologies, such as Positron Emission Tomography (PET), are also used in neuroimaging studies. Weakly radioactive glucose is used so that areas of the brain that absorb more blood due to cognitive activity caused by the radiation of radioactive material in the image are specified. Before choosing the appropriate neuroimaging method for a particular cognitive function, one must determine the proper fit between that function and the intended imaging method (Miyashita, 2004; Gilboa, 2017). In cognitive assignments, a set of stimuli is presented, and at the same time, the outcome of the BOLD response is examined. This response represents a steady state of the individual hemodynamic response functions against the set of stimuli presented. In the current study, there is a great deal of interest in examining theories about the relationship between previous teachings and new learning and the role of the neocortical hippocampus (Miyashita, 2004; Osada et al., 2008). These studies examine the role of neural circuits and synaptic processes in the hippocampus and neocortex in memory formation, which the main principles are:

1. The role of schemas in consolidating neocortical memory.
2. How to update memory as a critical factor in consolidating memory in the hippocampus.

Despite some architectural innovations, its core pedagogical theory remains firmly rooted in the past, ignoring significant biological insights about the human condition and our functioning. Cultural and social factors shape, process, and transform our cognitive schemas and processes. During the learning process, schemas are formed to structure the individual's mental models of the subject matter. Learning can be influenced by previous learning and supplementary learning that has emerged from cognitive psychology. Professors who understand these theories can choose the most suitable teaching-learning methods. Mental models or schemas represent a specific part of a cognitive system. Changes in one part affect others in a cause-and-effect relationship. It reinforces learning when learning conditions are appropriate for the sensory input associated with the learned subject. This means there is a logical connection between sensory stimulation and the subject matter because the sensory stimulus and the subject matter relate to previous experiences. Therefore, creating a schema facilitates learning. For example, the use of non-verbal skills by speakers of speeches creates a kind of multisensory interaction. Perceptual representations are formed when body postures stimulate the listener's pre-motor cortex. The homogeneity of auditory-conceptual perceptions results in better understanding, representation, and learning.

Learning studies emphasize the crucial role of multiple sensory aspects in information processing. These findings confirm each other, whether electrophysiological (Event-Related Potential (ERP)) or functional magnetic resonance imaging (Shams et al., 2008; Tatz et al., 2021). Seitz and Shams have proposed three possible neural processes in support of the theory of multisensory or multimedia learning, which includes, creating change and synergy in one-dimensional sensory structures, change of multisensory structures that interact indirectly with each other, and modification and facilitation of encoding in multi-sensory structures by other multi-sensory structures (Shams et al., 2008).

The appropriateness of learning conditions to the type of sensory input related to the subject being learned reinforces learning, meaning that because the sensory stimulus and the subject matter are relevant to the individual's previous experiences, there is a logical relationship. Hence, it is tangible that creating a schema will facilitate learning. For example, when giving a speech, using non-verbal skills by the speakers creates a kind of multisensory interaction. Enhancing speech content with body postures causes the formation of perceptual representations in the pre-motor cortex of the listeners. This homogeneity links auditory-conceptual perceptions and body movements (e.g., proportionate hand movements), resulting in more and better understanding, representation, and learning. It should be noted that some actions that have a work aspect (such as running) are also represented in parts of the motor cortex, while actions that are not (such as knowing) create activity in the pre-motor cortex.

Accordingly, researchers have long focused on the function of the brain in the learning process as an integrated structure. If appropriately used, E-learning, multimedia learning, educational skills, existing software used in the design of educational content, and many current topics in teaching and learning will have increasing effects on improving education. Examining the interaction of different brain regions in information processing, learning consolidation, and memory retrieval can be done in detail in future neuroscience and cognitive research. In their core thinking, architectural design educators might hold the false notion that the mind is a "blank slate." In reality, humans are hardwired to respond to specific patterns in particular ways when they enter the world; it is time for architects and educators to take note of this reality as well (Sussman et al., 2014).

Therefore, by inviting brain researchers to natural learning environments, the interaction between neuroscientists, educators, and professors providing architecture education can be strengthened. It should be noted. However, those non-specialist understandings of neuroscience findings will lead to distortions of educational neuroscience (Gobet, 2005; Gobet et al., 2001).

The interdisciplinary field of neuroscience and education includes the interconnected findings of three types of studies: scientific, mediating, and practical. Each is derived from three types of primary evidence (biological, experimental, and social). Today, advanced technologies such as functional magnetic resonance imaging, event-dependent capacity (ERP), Magneto Encephalo Graphy (MEG), and positron emission tomography are practical tools in neuroscience studies. They have found a prominent place. The necessary evidence can be collected and analyzed to achieve the goals of cognitive neuroscience research in related fields such as teaching and learning. Of course, there is no one-to-one relationship between these three types of study and the three types of evidence on which they are based. With the increase in human capabilities, the need to process information in the environment has also increased. In this process and the transformation from natural experiences to scientific experiences, architects need to set criteria for designing the environment. People are affected by various environmental elements every day. Their feelings, perceptions, and desires are affected by the environment. Neuroscience in architects' access to those criteria can be very useful. The brain, as one of the most complex organs in the human body, which is responsible for processing all information received from environmental stimuli through the five senses as well as intellectual, emotional, and intuitive perceptions, is the basis of new

research conducted in recent years by brain scientists and some architects as well as environmental psychologists are doing (Sternberg, 2006). Advanced equipment has made it possible for learners to understand more accurately the effects of the environment on the nervous system, the active areas of the brain against environmental stimuli, and the extent to which each affects the brain, perceptions, and emotions. Relying on that information while defining the appropriate architectural criteria, an environment in harmony with human beings' physiological and neural structure is created. The Academy of Neuroscience for Architecture of the American Association of Architects is one of the research centers in this regard (Sternberg, 2006). Significantly as the use of technology and computers is changing our brains, it is essential to become more familiar with how these technologies alter our brains. Teachers, as brain changers, can promote deep learning by building on the student's prior knowledge, and that knowledge base provides the foundation for deeper understanding and transference (Hattie et al., 2017).

In this regard, neuroscience can be helpful for an architecture career in two ways. First helps educate future architects according to their capacities and based on new computer technologies which have evolved the learning and the capabilities of today's learners. Second, it helps future architects find the mentality that they should design according to the affects, needs, and desires of today's human mind.

Mind, Brain, Education (MBE): Joint Chapter of Neuroscience and Educational Sciences

Applying neuroscience research in educational settings is not straightforward (Bruer, 1999). In any case, in the study of scientific texts, we encounter two significant gaps between the two fields (Tokuhama-Espinosa, 2015). The first gap arises from the abstract concepts of neuroscience and the educational sciences and the epistemological differences between their explanatory and scientific theories. The second gap stems from the differences between the basic sciences on the one hand and the applied sciences on the other (Della Sala, 2009). These differences are in the field of the underlying neuroscience philosophy, theory, research method, and data type (Tokuhama-Espinosa, 2015) and in educational practice in terms of cost, time, and issues of this kind (Tokuhama-Espinosa, 2015). Despite all these obstacles, today, some prominent researchers in neuroscience and educational sciences strongly believe that it is possible to bridge these gaps and that the link between these two branches of science is mutually beneficial (Goswami, 2006; Tokuhama-Espinosa, 2015; Della Sala, 2009; Ansari, 2011; Della Sala, 2012). Effective practice has been proposed to link different dimensions of neuroscience and educational sciences. Because these gaps involve scientific and practical aspects, establishing this link requires a complex and multi-step approach. Ansari and Coch believe collective effort and wisdom are needed to clearly define the goals and benefits of linking educational sciences and cognitive neuroscience (Ansari, 2011). In this regard, a new branch of applied sciences has been formed in Mind, Brain, and Education (MBE), which considers using brain knowledge in teaching and learning sciences necessary and undeniable (Ansari, 2011). Science in Mind, Brain, and Education (MBE) is, by definition, transdisciplinary. The Science of Learning (MBE) integrates neuroscience, psychology, and education to identify research-informed practices to help students achieve the ultimate goal of the discipline. With this approach, a new perspective is applied to

research and training consistent with education's very nature, namely understanding and managing educational processes (Steenbeek, 2015 #9). This new field is expected to provide accurate information on the potential consequences of the interaction between neuroscience and academic science (Della Sala, 2012). Ansari and Coch suggest that teachers should learn the basics of neuroscience and that neuroscientists should be trained in the basics and theories of teaching methods (Ansari, 2011).

It is essential to point out two issues here to understand the potentially beneficial effects of this interaction. The extent to which educational principles, mechanisms, and theories can be improved and complemented by the findings of cognitive neuroscience and the category of neuroscience principles that may be applied in academic research, leading to attractive and used interdisciplinary research experiences. The results of knowledge sharing and effort in the two fields of education and neuroscience will include a better understanding of learning, using theoretical knowledge in education, and interdisciplinary research projects (Ching, 2020; Sigman, 2014). In teaching architecture active processing of experiences and brain interaction with the environment, and the growth of neural networks can be a reasonable basis for designing brain-compatible training in architectural studios, which can take place by applying multiple technics, which are listed as follow:

- Using multimedia training to stimulate multiple senses:

Such as Smart Boards, Miro boards, 3D Printers, iPad, VR glasses, Touchable Holograms, Metaverse, etc.

- Creating a learning environment free of stress but with a degree of difficulty and a pleasant challenge:
Even though students might experience exhaustion and stress, especially during deadlines and charette, the vibe of the studio and the bonds between students can create a flexible environment that makes any student feel at ease.
- Motivate learning in the learner and facilitate it by being enthusiastic and by Strengthening students' self-confidence

Enthusiasm and passion are contagious. The educator's positive energy motivates students, as a positive attitude is necessary for a thriving learning atmosphere. Praise builds students' self-confidence, competence, and self-esteem. Recent neuroscience research has shown that receiving sincere praise activates the same areas in our brain that are activated when we receive money or romantic attention – the ventral striatum and the ventral medial prefrontal cortex. It is also said to release dopamine, which is associated with motivation, focus, and positivity. In other words, it activates the reward circuit in our brain.

The content of the course should seem exciting and relevant to the students and provide authentic, real-world tasks through engagement with community members. Educators sharing their love and passion for the profession can also motivate the students (Pilat, 2022). Including all learners to improve based on their brain capabilities: Varying teaching technics and diversifying the design studio environment by incorporating all potential learners with various talents according to their respective skill sets and disability, are means of including all learners based on their capabilities. In explaining brain-compatible educational methods, it is essential to consider the effects of nutrition and sleep (work hours of undergraduate, graduate, and doctoral

architecture students), individual differences, emotion in learning, motivation, and a positive attitude in the learner.

Many scientific principles of education can be well generalized in architecture education. Architecture education includes its various dimensions, including the characteristics of the subject matter, the training environment before the practical work and during the suitable course, the sense of responsibility, and the relationship with peers and professors (Matcha et al., 2019; Slavin, 2020; Tett et al., 2021). Findings of teaching-learning science can also help improve architecture education. These findings include the importance of individuals' prior learning in new learning, the effects of multimedia education, metacognition-based knowledge, and self-regulatory skills (Zhou, 2018; Wade et al., 2018).

Bruer emphasizes the following factors in this regard:

- Constructivist patterns of learning and teaching
- Active participation and involvement of learners in the learning process
- Semantic processing instead of parrot-like retention
- Create a learning environment that is minimally threatening and highly challenging (Bruer, 1999).

Students' engagement triggers neurochemical changes in the brain (Merzenich, 2013). As learning shapes, dendrites grow, and an increasingly vast network builds up. When two dendrites grow close together, chemical or electrical messages can be sent from one neuron to another. Over time—and numerous synapses—the pathways related to the topic are made more robust, allowing the student to connect and act upon learned ideas (Envision, 2015).

Students can be held back if they experience emotions such as fear, frustration, embarrassment, melancholy, and stress. Emotions control learning, according to scientists. In the limbic system, located in the lower part of the brain, incoming stimuli are interpreted emotionally. The limbic system interprets stimulus by opening or closing access to cortical function in higher parts of the brain. Many students mistakenly believe they have poor memories when their emotions have undermined them. In order to learn quickly and effectively, a different set of chemicals flow into the synapses when learners feel confident. The level of intelligence is not fixed. A neuron can grow more synapses and strengthen its connections, no matter how many synapses it has. The "growth" mindset of students who embrace this fact leads to a motivating sense of empowerment. As part of a learning process, in "growth" mode, students are more likely to work hard to develop their abilities (Sisk, 2018).

It is essential to strengthen such an interaction between neuroscience and architectural education, which has raised hopes in architecture education and related research (Douglas et al., 2019; Dossi et al., 2020; Metternich et al., 2020). Following from a psychological point of view, the role of previous teachings will be discussed, then from the spectrum of cognitive neuroscience, and finally, the use of these concepts in architecture education and research will be reviewed. This article tries to provide a good perspective of the interaction and synergy of architecture education and cognitive neuroscience by emphasizing its practical aspects by presenting a list of recommendations.

Cognitive Psychology Perspective on Previous Teachings and its relation to New Learning

One of the requirements for receiving and coding information and acquiring new knowledge in the mind-brain is the existence of previous knowledge related to that subject, which is referred to as mental design or schema (John, 2018). The term schema is often used instead of general knowledge, which leads to processing information in a particular field. Each student, while linking the separate structures of a concept together and linking them together, like a fabric, will be able to produce a schema and understand its content. Schema facilitates the process of encoding, storing, and retrieving information related to a domain (John, 2018). According to research, complex information is coded in the form of four main steps: concept selection and reconstruction, abstract thinking, interpretation, and conclusion (Gao et al., 2021; Kuhns et al., 2020). Reconstructing the concept is crucial in recovering stored information and reducing that amount of information as much as possible. In recent years, social and cultural perspectives on learning have changed the concept of schema. Cultural and social indicators influence our cognitive schemas and processes that play a decisive role in shaping, processing, and transforming schemas. The formation of schemas is an integral part of the student's learning process in which the individual's mental models of the subject are structured. Learning makes sense this way (Dunlosky et al., 2019; Obersteiner et al., 2019).

There is evidence to support meaningful learning, which refers to the employment of student-centered, active learning pedagogy, including:

- A. In the learning process, meaningful understanding by the learner is a decisive indicator.
- B. Learning meaningful concepts and learning how to do a task or acquire a skill are two separate processes.
- C. Some of what we have learned is limited to a specific area, while others are transferred to other areas (Michael, 2006).

The relationship of previous learning with new learning that has emerged from cognitive psychology can influence the learning process. Professors with a deep understanding of theories associated with cognitive psychology and neuroscience which applies to education can choose the best teaching-learning method and observe the effect of those methods in assessing their students (Dunlosky et al., 2019; Obersteiner et al., 2019; Di Vesta, 2017). The above concepts can improve students' learning, professional performance, and efficiency, leading to recommendations that change the way architecture courses are offered (Di Vesta, 2017; Lachman, 2015).

A mental model or schema is a kind of cognitive representation of a part of a system. The cause-and-effect relationship shows how a change in one part affects another (Lachman et al., 2015; Mayer, 2004; Dolmans et al., 2005). According to Mayer's theory, there are three essential steps in the process of meaningful change: understanding that what we encounter is different from what we have ever encountered and that current mental models cannot justify it. Build a new schema that represents these changes meaningfully and use a new model

that anticipates dealing with new conditions (Lachman et al., 2015; Mayer, 2004). These principles stem from the insights that cognitive psychology research has given us. Today, the emphasis of this branch of psychology is not merely on purely laboratory forms but on practical and realistic tests (Dunlosky et al., 2019; Di Vesta, 2017). Most of the researchers that support the practice of schema in architectural design education generally focus on the interaction between the student and instructor, such as producing concept-solving problems and integrating design strategies. One step to go further in these approaches is to include the cognitive actions of the design process, including the designer's cultural and psychological components, and to analyze the relationship between design activity and the designer's cultural schema in a design studio (Önal, 2017 #10).

Therefore, teachers should know what students learn and how they learn it in practice (Dolmans et al., 2005; Horvath et al., 2016). The above is a representation of evidence-based education, which is emphasized today by the European Commission's Education Commission (Dolmans et al., 2005; Horvath et al., 2016). Evidence-Based Education (EBE) seeks to bridge the gap between real-world learning on the one hand and education-related studies and research on the other (Ramani, 2006).

To achieve these goals, it is recommended that the methodology and policies of education should be studied and carefully reviewed by professors, teachers, and trainers. A new assessment method should be designed to improve the relationship between educational goals and learning lessons. Additionally, providing access to evidence at various levels for researchers in the field of education and neuroscience. In this way, the evidence obtained will help further research, policy development, and performance in the field of education (Ramani, 2006; Al-Eraky, 2015, p. 1018).

Fortunately, many of these recommendations have been used to provide architecture education and related research. The result can be evidence-based architecture education that is gaining traction today and can improve the quality of architecture education worldwide. Cognitive neuroscience research offers a multi-step approach to bridging the gap between architecture education and neuroscience. In teaching architecture, two types of learning are essential, in which the importance of students' previous teachings is evident. Multimedia or multisensory learning and the acquisition of specific skills (Paas et al., 2004; Schneider et al., 2010; GAO et al., 2009; Maia et al., 2020).

Meaningful learning is achieved when a person selects a specific section from a mass of information, organizes it logically and meaningfully, temporarily stores it in their short-term and active memory, and then combines this information with previous teachings will leave them in the long-term memory. In multimedia education, the information presented in multimedia increases the learner's problem-solving ability; the person finds the ability to compare different information and draws a better picture of the problem in mind (Lasry et al., 2007). In this regard, Aulls and Lasry have proposed a theoretical model based on multiple mental representations called n-coding (Lasry et al., 2007). The structure of multiple coding indicates how information is processed independently in various aspects, such as verbal, visual, tactile, mathematical and logical, and social. The

proponents of this model believe that using multiple encryption structures leads to better and more effective problem-solving and conceptual knowledge.

In addition, research from this model shows that to achieve a more appropriate educational learning environment, more dimensions of conceptual input should be considered. Given that the space for multidimensional learning, e-learning, and multimedia education is currently provided in the architecture education system, the critical point is to optimize how to benefit from these dimensions, quality, quantity, sequence, and timing (Kapenieks, 2013; Ali et al, 2021). In such an environment, students' previous encounters with teaching should be considered in their encounters with subsequent teachings. Teaching based on multiple sensory methods will lead to the conceptualization of facts in students' minds and, consequently, effective learning in them (Paas et al, 2004; Schneider et al, 2010).

An example of multimedia that can be used in studios is Metaverse which creates spaces where the real and the virtual world become one. Users can interact with one another in the form of avatars utilizing virtual reality technologies in the metaverse. This online virtual environment combines augmented reality, virtual reality, 3D holographic avatars, video, and other digital communication. In addition, the metaverse enables us to explore fully immersive 3D environments while extending our ability to see, hear, and touch. Since locations influence our emotions and an excellent environmental design produces emotion and purpose, the Metaverse is an inclusive and commonplace universe. As a result, in addition to teaching about architectural history, construction methods, and materials, architectural education will also need to use digital media and 3D technologies. ("Designing the Metaverse: What Is Metaverse Architecture?").

Students can present their work in the metaverse, a network of 3D virtual worlds focused on social connection. Students can explore how "new tools enable designers to tell richer design narratives through annotated site models, interactive design options, exploded-axons that become three dimensional exploded models, section-cuts that become experiential, and fully experiencing the designs at 1-to-1 scale" in these 3D worlds. (Foster, 2022)

Conclusion

The following conclusions and suggestions can be presented from what has been briefly discussed in this article. Given the promising results of interdisciplinary research in cognitive neuroscience and educational sciences and the potential fields of applied and practical research in architecture education, the possibility of positive reinforcement and synergy between architecture education and neuroscience findings exists.

Cognitive psychology is essential in creating a conceptual connection between neuroscience findings and architectural education. Teachers must be aware of what students are learning and how they learn. This principle is the basis of evidence-based education that strengthens the connection between learning and strategies for its improvement through basic and applied studies. Since the formation of schemas plays a pivotal role in the active

learning of students, studying this topic can be a research priority. Recent studies in neuropsychology emphasize multimedia education. Examining such homogeneity determines whether the combination of inputs of different sensory aspects can be institutionalized in the form of a schema.

To understand the brain processing and neural circuits involved in learning, it is necessary to be aware of theories related to learning and memory from the perspective of neuroscience, educational sciences, cognitive psychology, and philosophy. To enter the field of neuroscience studies and teaching-learning science, and especially architecture education, it is necessary to form interdisciplinary working groups that include at least specialists in neuroscience, architecture, educational sciences, and cognitive psychology. The basis of all this research should be evidence-based learning.

Opportunities for conducting attractive research in architecture education should be explored and introduced. Topics such as the role of previous teachings in understanding new content and learning multisensory or multimedia aspects of architecture can be prioritized.

It is recommended to provide codified training courses based on an interdisciplinary approach to supplement the knowledge of specialists, professors, and trainers. Mind, brain, education, learning, and language are topics that not all professors in the field of architectural education are aware of in its various aspects. Familiarity with these concepts is the background for moving toward applied research in architecture education and its neurological infrastructure. Instead of just trying to continue what already exists as evidence-based learning sciences, one can think of defining a new branch of research, including the mind, brain, and education, so that it can be considered a new science of learning.

Neuroscience can be used as a tool for facilitating teaching in the architectural faculties in order to prepare professionals in the area better. Understanding the brain and how it works is helpful for educators to become high-impact effective teachers. Educators may seize the opportunity to explore neuroscience's incredible depth of knowledge to improve their daily interactions with students. Finding out some of the ways the process of learning takes place in the brain helps to teach architecture to the students more indirectly and reliably than the didactically and through disciplinary autonomy that has been dominant in the studios for ages. his methodology helps to understand individuals' ways of learning and to diversify the profession, not only for those who are talented and born as architects but also for those seeking opportunities according to their passion and dedication. In design pedagogies, neuroscience can be used as a tool to create equity, inclusion, and consideration for all.

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The Media and Predictors Hitherto Ignored in Mitigating Vaccine Hesitancy

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Abstract: The COVID-19 pandemic has caused massive negative shocks across countries. Various research institutes have worked assiduously to develop vaccines to help fight the pandemic but misinformation from the media has spurred public outcry in several countries not to take jabs. This study leverages massive data [i.e., responses from more than 140,000 people sampled from 144 countries] extracted from the Gallup World Poll's Wellcome Global Monitor, to analyze and assess how the media contributes to inadequate dissemination of basic scientific knowledge on the vaccines, and spread of distrust in central governments as predictors of vaccine hesitancy. The results show that all three predictors are statistically significant at 5% level and that appropriate design and dissemination of basic scientific knowledge on the vaccines, and spread of justified reasons to trust governments would help mitigate vaccine hesitancy. The implication of the results is that the media needs to consider such predictors hitherto ignored.

Keywords: COVID-19 pandemic, vaccine hesitancy, media and communication, basic scientific knowledge, distrust in central governments

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Introduction

The coronavirus (COVID-19) pandemic started spreading in December 2019 in Wuhan, China (A. Kumar et al., 2021). There has been a rise in the total number of people infected with the virus. As at December 31st 2019, the number of people that were infected in China stood at 104 according to a report from Chinese Center for Disease Control (CDC) and Prevention as reported by CDC (2021). Due to the connected nature of the world, the coronavirus has spread to other countries. From December 2019 to November 2021, nearly 81.3 million people have been infected in Asia, with about 98,500 in China (CDC, 2021). The number of infections in China began to increase rapidly in December 2019 and peaked in mid-February 2020, after which the daily increase began to decline rapidly. Since the beginning of April 2020, the number of infected people in China has increased by no more than 2,000 per day (CDC, 2021). The number of infections across Europe reached 70.2 million by December 2021 (Worldometer, 2022). The coronavirus, herein referred to as COVID-19, is spreading

rapidly around the world, with the total number of people infected globally reaching nearly 306 million as at January 9, 2022 (Worldometer, 2022).

Researchers are trying to control the spread of the virus by developing vaccines and health institutions vaccinating people who are vulnerable. As of June 2021, a total of 16 COVID-19 vaccines have been approved and in use (CDC, 2021; GAVI, 2022). Examples include the novel coronavirus vaccine developed by Pfizer (2022) of the United States and the CoronaVac developed by Beijing Kexing Zhongwei Biotechnology Co. Ltd. in China (CDC, 2021). To ensure equitable access to COVID-19 vaccines in every country, GAVI, WHO and the Alliance for Pandemic Preparedness jointly developed and implemented the COVID-19 Vaccine Access Project (GAVI, 2022). The aim is to give participating countries access to the widest and most diverse portfolio of vaccine candidates in the world, ensure simultaneous access to COVID-19 vaccines in all countries, and prioritize high-risk populations including health workers and the elderly (Löwensteyn *et al.*, 2021; Debellut *et al.*, 2021; Luthra *et al.*, 2021; Dadari *et al.*, 2021). As of 9 January 2022, the website “Our World in Data” has counted 9,490,712,311 novel coronavirus vaccine doses globally, with a vaccination rate of 59.23% (OurWorldinData, 2021). The total of 59.4% of the world’s population has received at least one dose of the novel coronavirus vaccine, with 35.06 million doses per day (OurWorldinData, 2021). Though nearly 10 billion vaccinations have been administered, there are several billions more people in developing countries are yet to be vaccinated. Thus, vaccination is skewed in favor of large economies [see Figure 1]. Only 9.5% of people in low-income countries have received at least one dose (GAVI, 2022). As depicted in Figure 1, the United Arab Emirates (UAE) has the highest percentage of vaccinated people in the world, at 99% (GAVI, 2022).

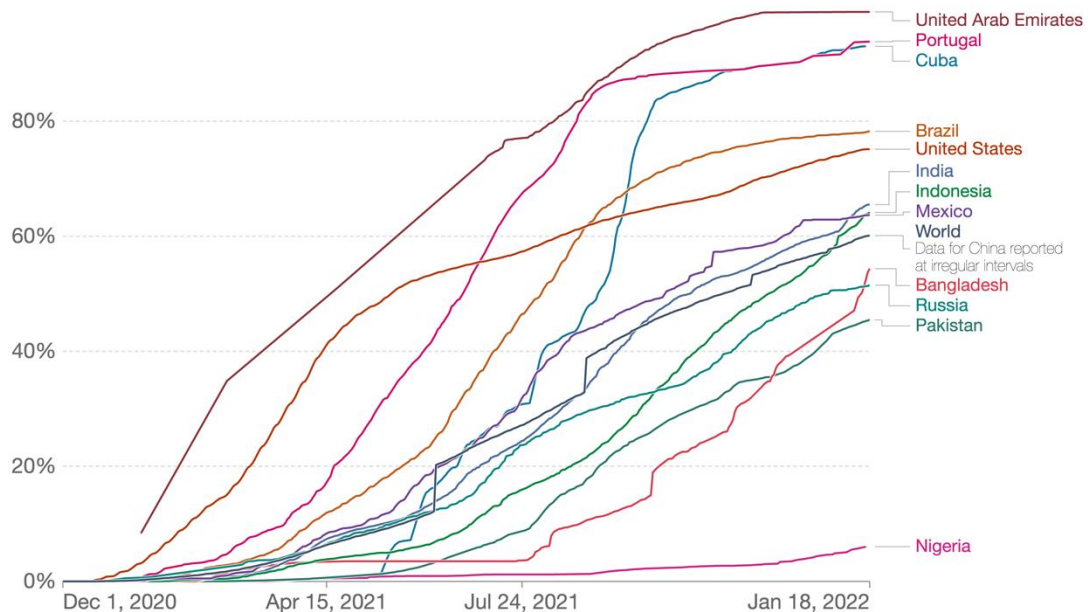


Figure 1. Share of people who received at least one dose of COVID-19 vaccine. Source: Official data collated by Our World in Data (2021).

Despite the increase in vaccinations worldwide [see Figure 1], there are a significant proportion of the population that hesitate to get vaccinated (Ahmed, 2021). Though vaccine distribution is woefully unequal [among nations], other factors give rise to the increase in vaccine hesitancy.

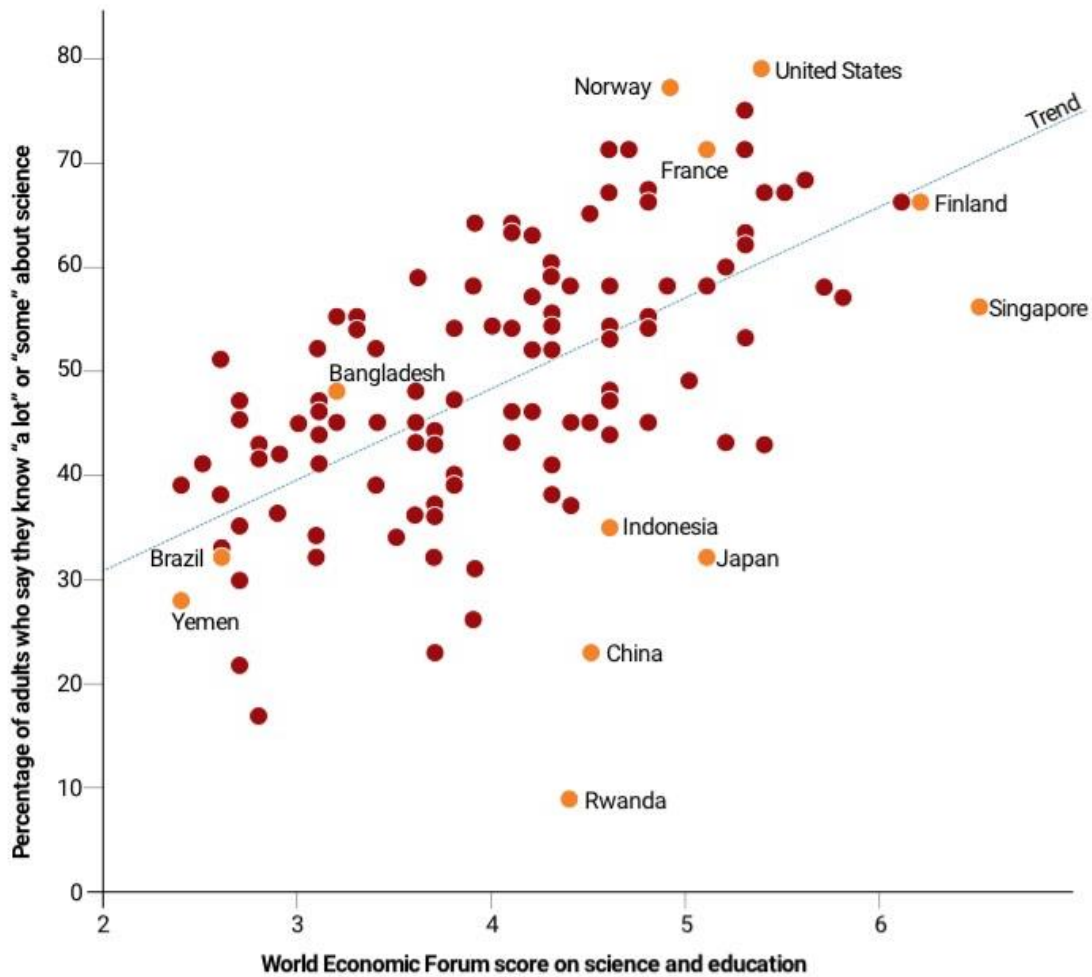


Figure 2. People’s perception of scientific knowledge versus actual tests of their acquired knowledge. Source: Rabesandratana (2019)

Unreliable information spread via media platforms including vlogs, blogs, websites and social media, etc., about the assort of COVID-19 vaccines is [arguably] one of the reasons for the anti-vax movement (Miyazaki *et al.*, 2021; Wawrzuta *et al.*, 2021). The often-unverified information spread by the media include the side effects of the vaccinations, and the relatively short time it took to develop the vaccines (Adepoju, 2021). These indicators are prevalent due to the limited information the average citizen has on science, particularly on vaccine development. Though a significant proportion of the adult population claim ‘a lot’ or ‘some’ science [see Figure 2], it is unclear whether their knowledge on science is relevant to understanding the processes involved in vaccine development. Thus, inadequate knowledge of basic scientific knowledge relevant to understanding the development of vaccines could hinder the readiness of people to get vaccinated (Fisayo, 2021; Allchin, 2021; Motta *et al.*, 2021).

In addition to the misinformation and inadequate basic scientific knowledge, distrust in central governments could also deter people to get vaccinated (Ebeling *et al.*, 2021; Benoit and Mauldin, 2021). Issues revolving around 5G technology, big data and surveillance have propelled the distrust of people in their respective governments, and anti-vaxxers have extended the distrust to COVID-19 vaccines. In the United States, Netherlands, Germany, other European countries and nearly all nations around the globe, vaccine hesitancy exists and there is the need to research into the predictors. Existing research including Schwarzinger and Luchini (2021), Heyerdahl *et al.* (2022), Kumar *et al.* (2021), and Azarpanah *et al.* (2021), etc., have conducted related studies but no scientific investigation that uses data from a global perspective has been done.

In line with contributing to filling the research gaps identified, this study leverages extensive data that extracted from the Gallup World Poll's Wellcome Global Monitor and presents responses from over 100,000 people sampled across the globe, to investigate whether the media, inadequate dissemination of basic scientific knowledge on the vaccines, and spread of distrust in central governments are predictors of vaccine hesitancy. As the world strives to achieve herd immunity, and hopefully eradicate the COVID-19 pandemic, unearthing the predictors of vaccine hesitancy has a probability to increase vaccinations [given that vaccine doses are available in supply], which would speed up the process towards transitioning to the COVID-free world. The novelties herein cover two folds; the unique technique adopted in quantifying vaccine hesitancy, and the massive representation of respondents across the globe. The novel approach proposed to quantifying vaccine hesitancy, backed by a global representation produces results that are timely and relevant in drafting of COVID-19 mitigation policies.

The rest of this study cover three sections namely methodology, results and discussions, and conclusion. Section 2 captures the material utilized and methods adopted in deriving the empirical findings. The empirical results, interpretation and discussions thereof are presented in section 4. The study provides concluding remarks in section 5.

Methods

The materials, in terms of data, used in the study cover existing survey data from over 140,000 people sampled from 144 countries. This data was extracted from the Gallup World Poll's Wellcome Global Monitor (see Stevens and Dugan, 2021; Wellcome, 2020). For the Wellcome Global Monitor Covid-19 study and related data published by (Wellcome, 2020), a sample of 1,000 respondents aged 15 years or older were sample from each country. The study used responses from sampled respondents aged 15 or older. The minimum age was set at 15 because it reflects the requirements used by Wellcome Global Monitor – the data repository – and existing literature have adopted the 15+ approach [see Cardozo *et al.*, 2004; Decker *et al.*, 2014; Jonker *et al.*, 2020]. Added, across the globe different countries accept variety of age requirements for individuals to make contributions to resolving societal problems, but 15 cuts across board. The survey that serves as the core source of data of the study was conducted online and individuals aged 15 or older that can read and use a communication device (laptop, desktop, mobile phone, etc.) has, arguably, accessed some information on

COVID-19, and vaccines. In the United States and the United Kingdom, prior to the development of the required vaccines, some students (15 and older) were concerned about the availability and use of vaccines for their age group [see Bollyky, 2021; Saxena *et al.*, 2021; Weiner, 2021]. Thus, evidence of their concern and the possession of relevant information and technological skills justify their inclusion in the sample selection.

A total of 113 countries were selected out of the 144 for the Wellcome Global Monitor Covid-19 study. Data was gathered from the respondents through interviews. Topics covered in during the interview include topics on age, religion, educational level, income, settlement (rural or urban), knowledge on science, knowledge of and believe in the health system, media, knowledge on governance, diseases [infectious and otherwise], etc.

According to Palamenghi *et al.* (2020), Murphy *et al.* (2021), Webb Hooper, Nápoles and Pérez-Stable (2021), Rozek *et al.* (2021), and Latkin *et al.* (2021), anti-vaxxers trace their decision to questioning the trust that scientist conduct research [on the COVID-19 vaccine] with their interest at heart. Against this backdrop, the study selects the indicator ‘Base Coronavirus Decisions on Scientific Advice: National Govt’ represented by questionnaire number ‘W15_1A’ in the Wellcome Global Monitor Covid-19 study, as a proxy for vaccine hesitancy. Respondents answered by choosing one of the following 5 options: 1 for ‘a lot’, 2 for ‘some’, 3 for ‘not much’, 4 for ‘not at all’, and 99 for ‘refused to answer’. Following such measures, the indicator ‘W15_1B Base Coronavirus Decisions on Scientific Advice: Friends/Family’, ‘W29 How Often See Information About Health on Social Media’ and ‘W5B Trust the National Government in This Country’ are used as proxies for basic scientific knowledge, impact of media, and trust in the governments, respectively.

A crosstabulation is performed to identify the dependence of the three selected predictors on vaccine hesitancy. Results from the crosstabulations also helps in identifying missing data inputs which would be resolved prior to using the data for further relational analysis. Upon the completion of processing the data, a heteroscedasticity and autocorrelation consistent (HAC) model would be applied to the processed data to estimate the effect of the predictors on vaccine hesitancy. Given that vaccine hesitancy is designated as VCH, basic scientific knowledge as BSK, media as MDE, and distrust in central government as DCG, the empirical HAC model is estimated as:

$$VCH_i = \hat{O} + v_1BSK_i + v_2MDE_i + v_3DCG_i + \hat{e}_i \quad (1)$$

where: \hat{O} is a constant term, v is slope coefficient, \hat{e} is error term, i is respondent. It is expected that the selected indicators all impact vaccine hesitancy, and that the expected signs of the predictors are $v_1 > 0$, $v_2 > 0$, and $v_3 > 0$. The statistical significance of the coefficients $v_1 \dots v_3$, at 5% level is interpreted as rejection of the hypothesis that the selected predictor does not impact vaccine hesitancy.

Results and Discussion

Table 1 shows a summary of the four indicators. From Table 1, it is observed that several respondents participated in the survey but the actual number of people that responded to each of the four indicators are uneven. Question on scientific knowledge, i.e., ‘Base Coronavirus Decisions on Scientific Advice: Friends/Family’ received the most response with a total of 115,586 responses worldwide. The least responded

query was on media, i.e., ‘How Often See Information about Health on Social Media’ which received a little over than 97,000 responses. Responses from nearly 100,000 participants is considerably high but results from Table 1 shows no information regarding the relationship among the indicators.

Table 1. Summary Statistics on the Selected Indicators

Indicator	Measure	Response	Global Total	
			Count N	Unweighted Count
Vaccine hesitancy (VCH)	W15_1A Base Coronavirus Decisions on Scientific Advice: National Govt	A lot	40.59%	46916
		Some	30.19%	35336
		Not much	13.04%	15513
		Not at all	10.09%	9667
		DK/Refused	6.09%	5139
		Total	100.00%	112,571
Basic scientific knowledge (BSK)	W15_1B Base Coronavirus Decisions on Scientific Advice: Friends/Family	A lot	38.4%	42866
		Some	35.0%	42348
		Not much	14.5%	18549
		Not at all	7.7%	8262
		DK/Refused	4.4%	3561
		Total	100.00%	115,586
Media (MDE)	W29 How Often See Information About Health on Social Media	All the time	9.11%	10850
		Most of the time	16.70%	21205
		Some of the time	59.38%	53966
		Never	13.84%	10366
		DK/Refused	0.97%	693
		Total	100.00%	97,080
Distrust in central governments (DCG)	W5B Trust the National Government in This Country	A lot	26.04%	24189
		Some	31.90%	35732
		Not much	18.37%	22183
		Not at all	17.04%	22786
		DK/Refused	6.64%	5676
		Total	100.00%	110,566

Table 2. Cross-tabulation of Vaccine Hesitancy and the Three Predictors

		Trust the National Government in This Country (DCG)					Total
		A lot	Some	Not much	Not at all	DK/Refused	
Base	A lot	17170	15427	6629	4580	1669	45475
Coronavirus	Some	4636	14734	8100	6073	1470	35013
Decisions on	Not much	1068	3359	5313	5034	649	15423
Scientific	Not at all	528	1143	1461	6092	400	9624
Advice:							
National Govt							
(VHC)	DK/Refused	787	1069	680	1007	1488	5031
Total		24189	35732	22183	22786	5676	110566

		Base Coronavirus Decisions on Scientific Advice: Friends/Family (BSK)					Total
		A lot	Some	Not much	Not at all	DK/Refused	
Base	A lot	24710	13952	5314	2263	677	46916
Coronavirus	Some	9376	18344	5195	1871	550	35336
Decisions on	Not much	3857	4933	5244	1252	227	15513
Scientific	Not at all	2560	2960	1662	2228	257	9667
Advice:							
National Govt							
(VHC)	DK/Refused	1137	1237	618	462	1685	5139
Total		41640	41426	18033	8076	3396	112571

		How Often See Information About Health on Social Media (MDE)					Total
		All of the time	Most of the time	Some of the time	Never	DK/Refused	
Base							
Coronavirus	A lot	4961	8364	20486	3840	243	37894
Decisions on	Some	2958	6747	16502	2744	153	29104
Scientific	Not much	1278	2927	7274	1295	63	12837
Advice:	Not at all	971	1601	4072	1100	54	7798
National Govt							
(VHC)	DK/Refused	367	640	1976	619	137	3739
Total		10535	20279	50310	9598	650	91372

Table 3 Chi-square Tests of Independence among the Selected Indicators

Relation		Value	df	Asymp. Sig. (2-sided)
VCH vs DCG	Pearson Chi-Square	33350.861 ^a	16	0.0000
	Likelihood Ratio	28207.5	16	0.0000
	Linear-by-Linear Association	6558.874	1	0.0000
	N of Valid Cases	110566		
		Value	df	Asymp. Sig. (2-sided)
VCH vs BSK	Pearson Chi-Square	32274.738 ^a	16	0.0000
	Likelihood Ratio	20216.26	16	0.0000

	Linear-by-Linear Association	16483.44	1	0.0000
	N of Valid Cases	112571		
		Value	df	Asymp. Sig. (2-sided)
VCH vs MDE	Pearson Chi-Square	1029.941 ^a	16	0.0000
	Likelihood Ratio	778.976	16	0.0000
	Linear-by-Linear Association	521.901	1	0.0000
	N of Valid Cases	91372		

Notes: ^a0 cells (0.0%) have expected count less than 5. The minimum expected count is 26.60.

Results from Table 2 introduces a form of relational association among the indicators. The crosstabulations presented in Table 2 and Chi-square test on the independence between vaccine hesitancy and selected predictor show that anti-vaxxers' behavior is dependent on spread of misinformation in the media, distrust in the government, and lack of the relevant basic scientific knowledge. This is supported by the statistical significance of Pearson Chi-Square for VCH vs DCG, VCH vs BSK, and VCH vs MDE presented in Table 3.

Like the results in Table 1, the sample size for the dependent/independent relational analysis in Table 2 are unequal. The variation is explained by reasons including by not limited to failure to respond (i.e., missing data) or refusal to respond to a question. The researcher normalized the data to get rid of missing data and responses for which participants indicated that they wish not to respond. After further processing the data to eliminate such issues, a total of 81,169 entries remained, and such was used for further econometric analysis.

Table 4. Heteroskedasticity-corrected Results, using Observations 1-81169

Dependent variable VHC					
Variable	Coefficient	Std. error	t-ratio	p-value	
constant	0.5830	0.0116	50.32	0.0000	***
DCG	0.3547	0.0029	120.50	0.0000	***
BSK	0.2037	0.0034	60.04	0.0000	***
MDE	0.0199	0.0033	6.09	0.0000	***
R-squared	0.2086***				
Adjusted R-squared	0.2085***				
P-value(F)	0.0000				

Through the application of econometrics, results from Table 4 derived from the heteroscedasticity and autocorrelation consistent (HAC) model, also support that the three predictors have significant impact on vaccine hesitancy. From Table 4, it is evident that spread of misinformation in the media (i.e., MDE), distrust in the government (i.e., DCG) and lack of the relevant basic scientific knowledge (i.e., BSK), with corresponding statistically significant coefficients 0.0199, 0.3547 and 0.2037 show that the three determinants predict vaccine hesitancy. Not only do the determinants individually predict vaccine hesitancy, the three variables jointly also

impact anti-vaxxers' behavior with an adjusted R-squared of 0.20854. Thus, the empirical results both from the dependent/independent relational analysis as well as advanced econometric techniques show that, globally, misinformation through the media, distrust in the government and lack of relevant basic scientific knowledge both individually and jointly impact people's tendencies to challenge getting vaccinated.

Conclusion

Researchers and decisionmakers alike are striving to make proven vaccines available to the public but anti-vaxxers are challenging such deployment. Through the application of novel methodologies, this study shows that empirical responses from over 100,000 people across the planet points out misinformation through the media, distrust in the government and lack of relevant basic scientific knowledge explain anti-vax behaviors. The results show that all three predictors are statistically significant at 5% level. Though the selected predictors are significant, they jointly explain only 20.86% of the variation in anti-vaxxers' behavior. The implication of the results is that decisionmakers should consider media, scientific knowledge, belief in the government, and other indicators hitherto ignored, to minimize the number of people who chose to not get vaccinated.

It can be deduced from results of this study that the world needs a communication medium which incorporates several actors including the researchers, medical professionals, media, and representatives of the public (particularly anti-vax groups). Each of these actors has particular interest but the common goal is to achieve a world free from COVID-19. Researchers and medical professionals are working tirelessly to develop vaccines to mitigate COVID-19 but the public is concerned about not being jabbed with vaccines that would have complications on their health. The government wishes advance in science could help eradicate COVID-19 pandemic and return systems to post-COVID-19 era and misinformation is detrimental to the success of such targets. The media is vested in reporting as much as there is a source to the story or news being reported. Due to the varied interests, distrust among these actors is problematic. As the results suggest, distrust and lack of relevant scientific knowledge drives vaccine hesitancy. Relay of relevant information among the actors (i.e., scientists, the government, media and the public) would streamline communication during the pandemic.

Recommendations

Based on the results, it is recommended that appropriate design and dissemination of basic scientific knowledge on the vaccines, and spread of justified reasons to trust governments should be encourage to help mitigate vaccine hesitancy. For such recommendation to be effective if implemented, it lingers on the world's ability to design and utilize a communication medium which incorporates several actors. The actors should include researchers, medical professionals, media, and representatives of the public (particularly anti-vax groups). In addition to measures that needs to be taken worldwide, it is also recommended that each central government plays critical role in dealing with vaccine hesitancy. The central government is entrusted to coordinate and run a country. Hence, activities such as media reporting and independent internet services needs to be closely monitored by the central government. The central government's ability to seek for the concerns of all parties,

timely response to questions would and adjustments to science education would help to deal with vaccine hesitancy.

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Educational Assessment in Emergencies: COVID-19 Pandemic Experience in Nigeria

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Abstract: COVID-19 pandemic lockdown is an emergency period in education where assessment of teaching and learning became inevitable to determine effectiveness of the digital processes used. The objectives of this research are to; (a) investigate the types of assessment used during the COVID-19 pandemic in Nigeria; (b) establish the effectiveness of the assessment tools used for distance/online teaching and learning; (c) identify the challenges of educational assessment during the pandemic era. The research questions include: (a) what are the types of assessment used during COVID-19 pandemic? (b) How effective were the assessment tools? (c) What are the challenges of educational assessment during the COVID-19 pandemic period? The findings on types of online assessment are; online discussion, written assignment, field work / practical tasks, virtual presentation, multiple choice examination questions and quizzes, short questions and answers text messaging, homework hotlines and others . The research identifies ongoing COVID-19 implications on students and the schools as; learning losses and increased inequality, internet connection problems, increased pressure on schools and school system, increased school dropouts, unequalled access to learning due to lack of access to digital learning portals and additional pressure on teachers to acquire digital knowledge update. All these affected proper assessment negatively. The research design include; library information, interview and participatory observation. The research concludes by noting that assessment if properly used can help mitigate the impact of the COVID-19 pandemic on educational system in Nigeria. It can encourage innovations and flexibility. Thus, the work encourages further discussions among educators, researchers, policy makers and the general public to work towards making sure educational assessments are part of a system to further teaching and learning especially online and to further the pursuit of equity.

Keywords: Educational, Assessment, Emergencies, COVID-19 and Pandemic

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Introduction

COVID-19 Pandemic which emerged in Wuhan, China affected the whole world in 2020, it turned into a pandemic globally within a short period. Schools were closed in 188 countries (UNESCO, 2020) and in many countries including Nigeria students had to take a break from face-to-face learning for months. During this

period, a rapid transition to emergency teaching and learning was required to prevent learning loss and ensure continuity of education. In this period, digital transformation and remote teaching became necessary, a situation that forced teachers and students to become digital in knowledge. According to Hodges and Fowler (2020) the remote teaching and digital teaching became temporary shift from face-to-face education, an alternative instructional mode in times of crisis.

In Nigeria these methods of teaching and learning allowed a large number of students to learn online. It also became inevitable to assess the students to provide feedback that will help stakeholders understand school children's progress and take appropriate pedagogical action to improve it. Berman, Haiertal and Pellegrin (2020) explained educational assessment as a process for getting information which can be used in making decisions especially as it concerns students' progress, teachers' performance, school curricula, programmes of the school, government policy and funding be it local, national or international.

Interest groups include; parents, caregivers who uses the assessment to measure the performance and ability of their children, teachers who will use the assessment to determine areas of success, focus additional and varied instruction. Schools, Districts, State governments and Organizations may use the assessment to monitor students' performance to enable them allocate appropriate funds to students need and take decisions on professional development needs as well.

Assessment is a federal government task, given as part of accountability to ensure equal educational opportunities. It not only measures learning outcome but also processes on how teaching and learning is occurring and opportunities to learning construct. (Gordon 1995). UNESCO (2020) recommends the use of distance learning programs, open educational application and social media platforms. In this uncertain and fluid environment, the regular challenges of assessing what and how students are learning became more complex especially in Nigeria with so many financial, technological, emotional, psychological, teaching and learning challenges.

Hodges, Moore, Lockee, Bond, & Jewett (2020) opine that teachers need information to guide online teaching and assessment. Most of the teachers were not prepared for the sudden emergency teaching both in facilities and knowledge of the digital system application. This situation they say affected the learning process of the historically marginalized, disadvantaged and undeserved students. Another issue is that assessment aid advancement in teaching and learning to the extent of bridging the gap emergencies like COVID-19 pandemic can create. Online assessment tools.com (2020) outlines these as the types of assessment tools that can be used; Alternative assessment, Authentic assessment, Summative assessment, Formative assessment, High-stakes assessment, Pre-assessment or Diagnostic assessment, Performance assessment and Confirmative assessment.

This paper identifies these as assessment tools used in Nigeria during the COVID-19 pandemic; written assessment, online discussion, field work/practical online tasks, virtual presentation, multiple choice examinations and quizzes, short question/answer text messaging, homework hotlines and others. The researcher

observe that most of these assessment tools were effective except for a few lapses. The challenges are internet connections and related problems, lack of knowledge on digital use by both the teachers and students, difficulties in concentration during teaching times, too many assignments and limited time allocated to the assignments, unsuitable online assignments, lack of the necessary learning materials, national power failure and other distractions. The paper identifies the online platforms used as; social media platforms- (Facebook, WhatsApp, twitter and Instagram), virtual classroom, zoom, skype and other internet learning platforms.

The paper also identifies the implications of COVID-19 pandemic on education and its assessment. This research was concluded by noting that assessment if properly used can help mitigate the impact of the COVID-19 pandemic. It encourages innovation and flexibility in education. This work recommends further discussions among educators, researchers, policy makers and general public to work towards making sure educational assessment is part of the system to further teaching and learning online and to help pursue equity.

Statement of the Problem

Due to social distancing, distance/ online teaching and learning became inevitable. The need to access what was going on as teaching and learning became necessary too. Considering the technological challenges and people's orientation to distance learning, there arose a need to know what was addressed using assessment and how it helped to solve the pandemic lockdown challenges in education.

Objective of the Study

- To investigate the types of online assessment used during the COVID-19 pandemic lockdown;
- To establish the effectiveness of the educational online assessment tools used during the COVID-19 lockdown;
- To identify the challenges of educational online assessment during the COVID-19 pandemic lockdown.

Research Questions

These research questions were adopted;

- What types of educational online assessment tools were adopted?
- How effective were the educational online assessment tools?
- What are the challenges of educational online assessment during the COVID-19 pandemic lockdown?

Significance of the Study

The outcome of this study will be useful to the parents, teachers, government educational sectors, students and the general public. It will enable stakeholders to put in place urgent measures that will enhance educational

goals and achievements in emergencies. The research encourages innovations. Academically, it will be useful as library document also it will contribute to existing body of knowledge upon which future researches would be built.

Review of Related Literature

Online Assessment

Educational assessment is the systematic process of finding out about a student's knowledge, experience, skill and beliefs using empirical data. The ultimate goal is to quantify and document how much a student knows. It is a continuous process and the result helps to improve teaching and learning. (Formplus Blog 2022). According to Kubliszyn and Borich (2016) in any learning experience, assessment often falls into a few broad categories such as essay, performance-based portfolio, and tests. They are of the view that there are various ways of conducting educational assessments; one only need to find the method that works best in his environment. Noting that one can use more than one educational assessment method; for instance, a combination of formative and summative assessment in a single learning process can help achieve the target. In the context of online learning, Arend (2007) and Kearns (2012) identifies various types of assessment in online courses as; written assignment, online discussion, field work, test, quiz, examination, virtual presentation and e-portfolio. This research will review Arend and Kearns assessment types.

Written Assignment.

Weller (2018) opines that "text remains the dominant communication form in education". Written assignment he says refers to a text-based document authorized in word processing, or similar software and submitted to an instructor for evaluation. It has been observed to be very effective in emergency remote teaching because both students and teachers are familiar with the format. It also notes that written assignment could be constructed during synchronous activities given appropriate technologies, but he also observes that synchronous interactions might best support less complex issues or be for planning activities. As observed by Arend and Kearns, written assignment is often used online.

Online Discussions

Online discussion is a little different from written assignment because it involves less formal writing. Aloni and Harrington (2018) observe that synchronous online discussion boards are effective tool for assessment. Braton (2020) observes that anyone who wants to use online discussion method can find tips for effective implementation in practitioner-friendly publication or more academic treatment. Online discussion may come like general question for class discussion or class may be divided into small groups. However, there are choices to be made about the subject or focus of the discussion (Lowenthal and Duncap 2020).

Even though online discussion is not purely text-based, it is possible that most discussion tools have embedded media and provide hypertext links that connect to learner-curated or learner-created element. To share their perspective for example, learner can create a slide-show presentation concept, map or other elements. Creative thinking on the teacher's part can result into more engaging discussion activities. Online discussion assessment is very effective for emergency remote education like in the COVID-19 pandemic era (Wilton & Brett 2020).

Fieldwork/ Practical Tasks

Dawn, Hodges & Jones (2020) observes that during emergency period fieldwork may be one of the most challenging activities to adapt. During emergency era arrangements and adaptations need to be approved by a licensing body. E. g. Medical students had to adapt to scheduled hours. During COVID-19 most schools curricula were redirected to suit the lockdown rules. To work with results, teachers need to modify fieldwork experiences in conjunction with stakeholders to make appropriate changes and significant cost were required to have access to technology (Hodges and Barbour 2020).

Test/ Quizzes/ Examination

Fawn and Ross (2020) states that these types of assessment can be done technological even though they are best fitted for offline assessment. According to Fawn and Ross in crisis times like COVID-19 pandemic, access to proper equipment to meet remote proctoring requirements can be problematic. Kim (2020) observes several circumstances relating to the pandemic that made these types of assessment far less ideal during the pandemic. He says, they add stress to the learner who are probably stressed, and they are not the best for students with special needs. Kim did not recommend these types of assessment for online assessment in emergency remote education, his reason being that they encourage poor academic performance and malpractice. However, these assessment tools were useful in Nigeria during the COVID19 pandemic era.

Virtual Presentation

According to Kenyon (2020) live presentation help students to "Generate learning". During crisis period students may struggle to find internet access and environment conducive for live presentations. However, Grajek (2020) and Trust (2020) opine that students learning through summarizing, mapping, drawing, self-explaining and teaching are well supported in the research literature as valid activities to support students learning that tally with generative learning are often provided. If students have sufficient access to technology, virtual presentation as assignment can take place in times of emergency, it is not difficult for students to create slideshow, narrated multimedia presentation, info graphics or other types of virtual presentation tools. According to Delmas (2017) some tools for presentation include community building features that may be beneficial in times of emergencies. Even under normal online learning conditions, a sense of belonging to a learning community matters. Budhai (2014) recommends working with students to select topics for presentation that align with course goals, provide specific details such as the length of the presentation time for presentation

and summarizing activity which will highlight key learning points. This tool is usually very effective where the internet and other technologies are available.

E-Portfolio

Farrell (2020) observes that COVID-19 pandemic and its requirement for instructors to seek alternative assessment greater types has pushed e-portfolio into greater use. It has been used to improve teaching. E-portfolio may be useful tool in assessment for organizing and displaying written assignments, reflections on fieldwork experiences and student created presentations in each of the various types of assessment discussed.

Challenges of Online Assessment

According to Kearns (2012) online assessment challenges arises with the process of gathering and evaluating information on what students know, understand and can do in order to make an informed decision about the next steps in the educational process. Before COVID-19 most learning assessment were dependent on students' physical presence. In Online Assessment Tools. Com (2020) formative assessment is particularly critical because learning needs to take place outside of the physical classroom and teachers and parents-turned teachers need to understand whether students are absorbing the content that is delivered to them in formats that differ from business-as-usual. In the absence of regular face to face interaction and observation that most teachers are used to, teachers are expected to develop practical strategies to make online classes engaging or effective. There have been reports of lack of trust in online tests as cheating may be facilitated (Whittle 2020).

During the COVID-19 crisis, pandemic induced restraints such as social distancing, home quarantine and isolation impacted family income and general wellbeing so much that teaching, and learning stopped. (Braton 2020). These effects are reported to have been seriously felt among the students and the teaching professionals in a range of contexts. The pandemic had added additional stressors like health concerns, travel restrictions, shortage of daily necessities and uncertainties about the future. The vacuum created and occupied by the COVID-19 pandemic provided the opportunity to learn and assess learning progress/effectiveness online.

Kearns (2012) identifies these as the challenges: faulty technological facilities; Internet connection problems; Students' inability to absorb knowledge and skills; coverage and learning outcomes; difficulties in concentration during classes due to shortage of facilities and limited student's interactions with teachers. Hodges and Fowler (2020) identify low resources, poor parental background and low connectivity context, network service providers inconsistency, poorly trained teachers in digital knowledge, academic dishonesty, poor infrastructure, commitment of students to submitting assessment, limited time allocated to the assignment, and decreased practical skills among the students as challenges.

Those affected by online learning adversely as observed are; homeless children, juveniles pushed into crime, working or hawking children subjected to abuse, refugees children, displaced children, children with special

education needs and disabilities (SEND), the social economically disadvantaged groups and the rural dwellers where the basic amenities are absent (UNESCO 2018). Assessment is not possible without education. Inequality of opportunities in educations is not a new issue in Nigeria, it was observed that low-income group may not have received adequate educations during this pandemic period due to no access to internet. There is a risk that millions of children may not return to school again due to the pandemic, financial constraints, fear of contacting the virus, and other barriers to education. This situation may create class gap, learning losses, learning gaps and incorrect assessment reports. (Ozgul multler, bunyamen. Babil 2022, UNESCO 2018, Hodges 2020 et al).

COVID-19 Pandemic Implications on Nigeria

In the view of National Academy of Education (2021) the COVID-19 implications will be felt for years, and we must continue to attempt to measure these implications on academic, social and emotional learning to provide support that will address such issues. Moreover, we will have a generation of children impacted by the COVID-19 pandemic, who will lack benchmark assessments, have inconsistent measures, or for a variety of factors stated earlier have summative assessment measures impacted by contextual variables. We must be vigilant to monitor and address the COVID-19 pandemic legacy particularly for our historical disadvantaged children.

Dorn, Hancock, Sarakasannus and Viruleg (2020) writing on ‘the hurt that COVID-19 induced on learners’ identifies these; learning losses and increased inequality. The implication is that these have brought significant disruption to education that may last for a lifetime. Children from families below poverty level dropped out of school. Even when schools resumed, they preferred to hawk goods and services.

Research Method

The researcher used information from the library, person to person interview and participatory observation method.

Population of the Study

The population of this study comprises of teachers and students from selected secondary schools in Southeastern States of Nigeria. The states are Abia, Enugu, Anambra, Imo, and Ebonyi. The study was conducted in the state capitals of these five states, the cities are Umuahia, Akwa, Abakaliki, Enugu, and Owerri. The choice came as a result of the availability of online facilities, most of the rural schools were not involved in online teaching and learning but some received little attention through radio and television teachings as directed by the federal government of Nigeria.

Sample Size and Sampling Techniques

The sampling technique was used in selecting thirty (30) teachers and sixty (60) students who were interviewed based on the distance learning/online teaching that was trending during the COVID-19 pandemic lockdown. Three teachers and six students were selected from each of the ten schools chosen from the urban areas. The researcher practically observed some teaching and learning sections within private schools and various homes.

Research Question 1

What are the Types of Online Assessment Used during COVID-19 Pandemic Teaching and Learning?

To answer this question interview was used. The respondents which include the teachers and students identified these seven (7) assessment tools as what was used. Though some schools did not use all as observed.

Both the teachers and students identified online platforms such as; Social media platforms (Facebook, WhatsApp, Instagram & Twitter), virtual classroom, Zoom, Skype, and android/smart phones as the channel used for teaching, learning and assessment.

Table1. Online Assessment Tools

• Written assignment	30/60
• Online discussion	30/60
• Fieldwork/ practical tasks	30/60
• Virtual presentation	30/60
• Multiple choice examination questions/quizzes	30/60
• Short questions/answers text messages	30/60
• Homework hotlines	30/60

Research Question 2

How Effective Were these Assessment Tools?

To answer question 2, the responses from the teachers and students reveal that;

- Written assignments were effective.
- Online discussions were very effective but due to technological challenges, such as low data, power failure, insufficient computers and android phones also network providers' inconsistency some lapses were observed.
- Fieldwork/practical task: the students accepted the adoption of this tool, however some students were not interested because they had no one to supervise or direct them. Some students could not submit their task result because they felt it was inadequate and poorly performed.
- Virtual presentation fairly utilized, students were timid and majority lacked the necessary facilities and skills.

- Multiple choice examination questions were effective according to the respondent however it cannot be seen as a true assessment because respondents claim it encourages guess work.
- Short answer text messaging was very effective. The respondent agreed that it helped the students very well.
- Homework hotlines were also effective. The students and teachers claim that it tracked the students and compelled them to work at home and submit to the teacher once the work is ready, however it was for students that had access to android and smart phones.

According to the respondent these assessment tools helped them to know their ability and performance while the teaching and learning was going on. On a general note, the assessment tools were effective.

Research question 3

What are the challenges of educational assessment during the COVID-19 pandemic lockdown?

The researcher through interview respondents and participatory observation identifies these as the challenges of educational assessment during the COVID-19 pandemic lockdown in Nigeria;

- Internet connection problems;
- Limited students/ teachers interaction;
- Difficulty in Concentration during teaching times due to faulty facilities;
- Too many assignments without supervision;
- Limited time allocated for the assignment;
- Most Online assignment were not suitable; and
- Poor family background for some students thereby hindering the provision of the necessary materials for assessment.

Discussion of Findings

From the information gathered and the analysis made it can be established that Nigerian students took a break from face-to-face learning during the lockdown and transition to emergency online education was required to prevent learning loss and ensure continuity of education. This temporary shift from face-to-face education had to alter instructional mode. Hodges, Moore, Lockee, Bond, and Jewett (2020) referred to it as emergency remote teaching (ERT), it differs in subjects (such as design, preparation, structure, instructional materials, students' access to learning, learning activities etc). This assessment from a distance and unexpected transition to learning online did not give Nigeria time for adequate preparation and design.

To eliminate the adverse effect of COVID-19 pandemic and to ensure continuity in education, online assessment was endorsed. In depth interviews were conducted using semi-structured interview questions for 30 teachers and 60 students across selected secondary schools in South Eastern States of Nigeria that are capable of running online learning/ teaching classes.

Natural observation was conducted by the researcher and literatures were reviewed. Results shows that students were really assessed using written assessment tools, online discussion, field work/practical tasks, tests, quizzes, examination, virtual presentation and other tools suitable for online assessment. Results shows in terms of effectiveness that these assessment tools were effective but with various lapses. Schools and teachers were not ready for the transition from normal classroom to virtual classroom. Results from the study revealed that half of both students and teachers had poor internet connection and limited knowledge of digital use.

Students and teachers agree that they had limited interactions with one another, and students claim it was part of the factor that made understanding of online teaching difficult. Approximately, 26 out of 60 students (43%) claim online teaching was not very effective because of distraction, faulty facilities and lack of the technologies while 34 (57%) claim it was very effective. Most of the teachers had limited experience on virtual teaching, only 12 (40%) teachers reported previous experience. All the 30(100%) teachers interviewed agree that they started learning and improving on the job.

About 22 out of 30(73%) interviewed teachers agreed that distance learning/ online tools are effective for teaching non-practical related courses. 43 out of 60 (73%) interviewed students' states that Practical tasks/ field work did not capture much of the students' attention. Most of them did not return their assignment due to no supervision. 45 out of 60 (77%) interviewed students says limited time allocated to teaching and assessment was a problem. 20 out of 30 (66%) interviewed teachers claimed it was difficult explaining complex ideas or concepts to students as more time was required. The same was the problem of students answering multiple choice examination questions. 25 out of 30 (83%) interviewed teachers believe online assessment promotes examination malpractices.

Notes made during the teachers and students interview as well as direct observation shows that virtual presentation was effective but there were few lapses. Efforts were made by teachers and students to use these tools for assessment but technology challenge, time allocation and lack of digital knowledge and software made it difficult.

Challenges and concerns appeared to cut across all of the assessment categories. These broad themes emerged from the discussion of challenges:

- Limited students-teachers interactions;
- Difficulty in concentration during teaching;
- Inability to absorb knowledge and skills;
- Cumbersome assignments given;
- Internet connection problems;
- Limited time allocated for the assignment;
- Poor results due to unsuitable online assignments;
- Shortage of laptops, computers, data;
- Constant power failure and

- Network service providers' irregularities. (Adedoyin and Soyikan, 2020).

Results of the findings identifies these as the impact COVID-19 pandemic had and may continue to have on educational assessment;

- Unpreparedness of schools and schools management for online education and assessment;
- Parents unpreparedness for distance and home schooling;
- Low income families' inability to produce learning resources without external support;
- Gaps in children care leading to increased influence of peer pressure and substance abuse leading to school dropouts;
- High economic costs and additional expenses on parents; and
- Rural communities lack of social amenities as well as inability to run digital schools.

The paper also identifies the implications of COVID-19 pandemic on education and its assessment as having a generation of children impacted by the COVID-19 pandemic, who will lack benchmark assessments, have inconsistent measures, or for a variety of factors have summative assessment measures impacted by contextual variables.

The research also identifies that online assessment can be made flexible and new innovations introduced for instance teachers can provide feedback to students through mailed or e-mail instructions also messaging platforms like (Messenger and WhatsApp) can be adopted.

Direct phone calls between teachers, Students and parents can also be utilized in the face of any pandemic. Homework hotlines can be provided to give feedback to students and parents. Communication between teachers and learners are necessary through phones since social distancing is required.

Conclusion

Nigerian educational systems were adversely affected during the COVID-19 pandemic lockdown. For a period of eight (8) months schools were shut down and students weren't learning. More than 60% of the students in South Eastern Nigeria did not attend online learning as recommended due to lack of technologies and financial handicap. Those in urban areas from poor background had issues such as inability to access the necessary technology learning tools.

Poor school management by federal and state government made the transition to online education difficult, assessment was not easy. Fear of contacting the virus made many to be withdrawn. The existing class gap brought learning loss. The issue of low-income group and the high-income group made many students drop out of school. Telecommunication industries were ineffective in providing services. There is a need for the telecommunication network providers to increase their internet coverage and broadband services so as to overcome internet-related issues.

Online assessment did not yield the much-expected result in Nigeria because being inappropriately handled, provided the wrong results in some areas. Students became unserious in submission of assessment and misunderstanding of concepts and ideas during the assessment became a routine.

Recommendation

The sudden transition to online assessment due to COVID-19 brought unique challenges. Obviously, pandemics don't come always, there is need for educational institutions and schools to develop contingency strategies and methods that may be useful for emergency teaching and learning. The research recommends the following;

- Courses and training should be organized regularly to address usage of online learning materials and management systems. Using Zoom, Google classroom, WhatsApp, etc. as learning apps should be added to the school curriculum.
- Federal and State School Management Board should develop a document showing assessment methods specifically prepared for emergency learning and teaching.
- Infrastructure for distance learning/online learning should be provided in secondary schools, where they exist, be improved.
- Sufficient timelines should be given for students to complete required assessments and submit assignments. The timeline should be designed based on student's programme or level.
- Schools should provide homework hotlines that will help the teachers and students in doing regular assignments.
- Most students are from low-income background and as such cannot afford a laptop, android phones and regular data. Some reside in regions with no internet connection, no electricity and poor network services. The schools should provide these devices in the school premises with the aid of government.
- Network providers should be encouraged to improve on their internet coverage and broadband services as well as subsidize data subscription for students and teachers, if possible, collaborate with the government to give this subsidized cost of internet services.
- Teachers should be trained on the usage of online teaching/learning management systems for effective training and assessment strategies.
- Online teaching and learning management systems should be integrated into normal daily teaching routine of each school. This would facilitate students-teacher understanding of these tools.
- Parents should be encouraged to provide learning facilities where it is financially possible to enable students use short question and answer text messaging to do some online assessment.
- Further research and discussions are recommended for educators, researchers and policy makers even the general public.

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Doctoral Student Mental Health and the Utilization of Services: Review of the Healthy Minds Study

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Abstract: Doctoral students experience mental health concerns, while 12% to 30.9% utilize support services such as counseling and prescription medication. Overall, one out of two students do not graduate. This quantitative correlational study explored the relationship between doctoral students' mental health status and the utilization of mental health services using data from the 2018-2019 Healthy Minds Study (HMS) data set, resulting in a doctoral student sample of $n = 5,568$. The findings include statistically significant relationships between students' sense of belonging, GPA, relationship status and gender to an associated increase in mental health concerns with approximately 28% using services. Findings support that Institutions of Higher Education and doctoral program faculty could play a role in mitigating doctoral students' mental health concerns. To summarize the task set forth for the leaders in higher education, Brene Brown (2018) states "...daring leaders who live into their values are never silent about hard things" (p.184).

Keywords: Doctoral Student Mental Health, Service Utilization, Sense of Belonging, Healthy Minds Study

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Introduction

Among Institutions of Higher Education (IHEs) in the United States, researchers report concerns over doctoral student mental health (Evans et al., 2018; George et al., 2017; Hunter & Devine, 2016), especially with the expanding awareness that only 50% of doctoral students complete their degree (George et al., 2017; Hunter & Devine, 2016; Martinez et al., 2013). There is a strong connection that has been shown within the research that academic performance is affected by mental health; with services and programs directed at improving student's mental health to support student success (George et al., 2017; Hunter & Devine, 2016; Lipson, Abelson, et al, 2019; Martinez et al., 2013; Tinto, 1993).

With the COVID-19 pandemic, research highlights that student in higher education continue to struggle and even more importantly, are showing increased rates of mental health concerns with reports of exacerbations due to the social isolation, loneliness, and general uncertainty due to the federal and state safety and health

guidelines (Chirikov et al., 2020; Lumpkin, 2021).

Background

Mental Health (MH) concerns are “conditions involving changes in emotion, thinking or behavior (or a combination of these). Mental illnesses are associated with distress and/or problems functioning in social, work or family activities” (American Psychiatric Association [APA], 2018, p.1). Within the college student population, MH concerns include depression, anxiety, substance abuse, trauma/abuse, suicide, along with other contributing factors such as sleep difficulties, physical illness, stress and management of work-life balance (Eisenberg & Lipson, 2019; Gruttadaro & Crudo, 2012; Lipson, Abelson, et al., 2019).

For doctoral students from 2019-2020, the prevalence of depression disorders was twice as often and anxiety disorders was one and a half times more than the previously recorded rates (Chirikov et al., 2020). In addition, Evans et al., (2018) reported that graduate students are 6 times more likely to indicate a mental health concern with 41% of graduate students experienced anxiety and 39% of graduate students experienced depression. Contributing factors to doctoral student MH concerns include both academic and social components such as advisor-advisee relationships, family and financial support, work-life balance, and program alignment to career aspirations (Di Pierro, 2017; Evans et al., 2018; George et al., 2017; Hunter & Devine, 2016; Martinez et al., 2013).

Mental health support services include counseling, medical appointments and medication dispensing at the discretion of a qualified practitioner (Fischbein & Bonfine, 2019; Hyun et al., 2006; Woolston, 2017). In a study by Hyun et al. (2006), 50.2% of doctoral students reported they had considered seeking care for their mental health concerns, but only 30.9% actually used services. In a large global sample of 5,700 doctoral students: 12% demonstrated help seeking behaviors, while 20% attempted to seek help, however reported that they did not feel supported by their program (Woolston, 2017). In addition, Fischbein and Bonfine (2019) determined that 16.6% of doctoral students (MD & PharmD) used counseling services, 24.9% used meds for academic concerns and 22.8% utilized meds for other reasons. Generally, more students are prescribed counseling versus medications as compared to the general population,

Increasing service utilization would benefit doctoral students in order to be empowered, improve advocacy and enable them to persist thereby improving the 50% attrition rate (Evans et al., 2018; Di Pierro, 2017; George et al., 2018; Hunter & Devine, 2016; Lovitts, 2000; Lovitts, 2001; Martinez et al, 2013; Tinto, 1993). Individually, persistent MH concerns can influence current and future educational/academic struggles, physical health concerns, social impairment/difficulties, and reduced job performance and unemployment (Di Pierro, 2017; Evans et al., 2018, George et al., 2018, Hunter & Devine, 2016; Lipson & Eisenberg, 2018). At the institutional level, as IHEs are becoming increasingly dependent on student tuition revenue for financial sustainability, it is important to reduce the current national attrition rate and support students to degree completion (Brimley et al., 2012; Lovitts, 2001).

More research is warranted in the area of doctoral/graduate student MH, contributing factors, and support/services that improve student's ability to persist to program completion especially with the external influences of the COVID-19 pandemic. Thereby improving IHEs ability to progress to independent and long-term financial sustainability. The purpose of this study was to explore the relationship between the perception of doctoral students' mental health status and the utilization of mental health services.

Method

The study is a quantitative non-experimental correlational design that utilizes a large publicly collected data set obtained from the Healthy Minds Study (HMS) (Eisenberg & Lipson, 2019). The HMS (Eisenberg & Lipson, 2019) contains collected information via a survey designed and disseminated by the Healthy Minds Network. Big data analytics utilizing a previously collected dataset allows for improved generalizability and validity through large sample sizes (Hussain, 2019; Wu et al., 2013).

Data Collection

Access to the HMS (Eisenberg & Lipson, 2019) was provided through an application process that was completed as directed by The Healthy Minds Network website. Access was granted to the dataset and codebook on June 30, 2020. Inclusion criteria for the subset is any student who self-identified as a active, enrolled doctoral student, specifically (JD, MD, PhD) within the survey. The HMS (Eisenberg & Lipson, 2019) is approved by the Institutional Review Board (IRB) at the University of Michigan, School of Health Sciences and Behavioral Sciences and the National Institute of Health (Eisenberg & Lipson, 2019). This study and dataset were anonymous as there is no identifying information and Russell Sage College IRB approved the project (#912-2020-2021) on November 9, 2020.

Data Analysis

Data analysis was performed with the IBM Statistical Package for the Social Sciences Version 26 (SPSS-26) software. Descriptive and relational statistics were utilized to explore relationships between the variables and analyze the participants in the study. The correlational tests performed assessed the strength and direction of the relationships between variables. With non-parametric testing, correlation coefficients are rarely larger than ($f = .50$) and often are small, making it difficult to assess the strength of the relationship (Cohen, 1988). Therefore, Cohen (1988, p. 355) scale was used as a means to assess the strength of relationships as a small effect size is .10, a medium effect size is .25, and a large effect size is .40.

Results

Within the HMS (Eisenberg & Lipson, 2019) data set, the total sample size of doctoral (JD, MD, PhD, and Other) student respondents is $n = 5,568$. There are 61.6% females and 38.4% male respondents, with the age

range of 18-73 years old. Other demographic variable responses included: doctoral degree type, enrollment status, Race, GPA, relationship status, and sense of belonging.

There was a statistically significant positive relationship between respondents' increased disagreement with their sense of belonging to their campus community and increased perceptions of anxiety ($\tau_b = .166, p < .01$), depression (PHQ-9: $\tau_b = .187, p < .01$; PHQ-2: $\tau_b = .170, p < .01$), eating and body image disorders ($\tau_b = .079, p < .01$), suicidal thoughts ($r_s = .105, p < 0.01$), lifetime history of abuse ($\tau_b = .084, p < .01$), emotional assault ($r_s = .081, p < .01$) and drug usage ($r_s = .039, p < .01$). A statistically significant negative relationship between increase in disagreement with their sense of belonging and the perceived positive mental health ($\tau_b = -0.269, p < .01$). There was a statistically significant positive relationship between respondents who experience increased disagreement with their sense of belonging to their campus community and an associated increase in the utilization of counseling services ($r_s = .100, p < .01$), and the utilization of prescription medication ($r_s = .119, p < .01$).

In terms of doctoral students' use of counseling, there was a small (Cohen, 1988) statistically significant relationship between the respondents' perception of their experiences of anxiety ($r_s = .158, p < .01$), depression (PHQ-9: $r_s = .127, p < .01$; PHQ-2: $r_s = .128, p < .01$), positive mental health ($r_s = -.092, p < .01$). For doctoral students' use of prescription medications, there was a small to medium (Cohen, 1988) statistically significant relationship between the respondents' perception of their experiences of anxiety ($r_s = .232, p < .01$), depression (PHQ-9: $r_s = .267, p < .01$; PHQ-2: $r_s = .273, p < .01$), positive mental health ($r_s = -.152, p < .01$), body image and eating disorders ($r_s = .102, p < .01$). Approximately, 28% of students from the sample responded yes to questions related to their current use of counseling services and/or prescription medications.

Discussion

Students' perception of their "sense of belonging or feeling that they are part of the campus community" plays an important role related to their mental health experiences. Tinto (1993) theory of doctoral student persistence supports that at IHEs a student's ability to integrate into the social system plays a significant role in their ability to successfully complete their academic programming. The faculty, staff, and peers play a part in this connection (George et al., 2017; Tinto, 1993), as humans ultimately are hard wired for connection as it provides purpose and meaning to life (Brown, 2012). The perception of connection or a students' sense of belonging to the campus community is based on "individuals' judgements about the degree to which the institution...is committed to student welfare" (Tinto, 1993, p. 117). Conley et al. (2017) report that college students' mental health concerns "place them at risk for a variety of later more serious difficulties, including academic failure and [increased] dropout... [along with] serious psychological problems...decreased social functioning and quality of life" (p.134). Mental health problems have an association with interpersonal difficulties such as low quality of social support, loneliness, interpersonal conflict and poor social problem solving (Conley et al., 2017; Hazell et al., 2020).

Chirikov et al. (2020) and Lumpkin (2021) report that since the start of the pandemic the rates of anxiety, depression, and a reduction in sleep are measurably higher in students. The larger portion of literature surrounding students' sense of belonging and the impact that has on their educational experience has been primarily focused on undergraduate students, very little has been performed for the graduate and doctoral student population (Stachl & Baranger, 2020). Interestingly enough, over the last decade the research supports that the utilization of mental health support services has increased throughout the educational system (Atkins et al., 2010, Chirikov et al., 2020; Evans et al., 2018). Much of this is due to the adoption and implementation of policies at the federal and state government level (Stephan et al., 2007). However, the prevalence of mental health concerns has not improved in conjunction with the use of support services (Escalante, 2020).

As doctoral students' perceptions of positive mental health increases, there is a significant relationship to an increase in sense of belonging and a decrease in the utilization of counseling and prescription medications. From the findings of this study, positive mental health was showing a significant inverse relationship as opposed to the poor mental health outcomes. Using positive mental health assessments and screenings could reduce the stigma and fear related students' concerns, allow for more open communication, connection and thereby enhance students' ability to complete their academic programming. With the well documented concerns regarding disclosure due to academic culture, it may be possible to change the conversation regarding mental health utilizing a strength-based approach (Evans et al., 2018; DiPierro, 2017; Hazell et al., 2020; Hunter & Devine, 2016; Lovitts, 2001).

Conclusion

There is an influx of information supporting the increase of mental health concerns, especially during the COVID-19 pandemic. However, IHEs have been dealing with increased demands for mental health support services to meet the growing needs of their students. From the findings of this study, the doctoral student population is experiencing concerns related to their mental health, using support services and IHEs are in the prime position to create a cultural shift that could promote better engagement and interactions between doctoral students and programming faculty, allowing doctoral students to achieve their full potential. As Wheatley (2017) states "we are not broken people. It's our relationships that need repair. It's relationships that bring us back to health, wholeness, holiness" (p. 240). The current higher educational system needs to build better relationships, develop and enhance students' sense of belonging and connectedness to the educational community. People are our most essential and valued asset (Brimley et al., 2012; Wheatley, 2017). When students are able to feel connected and supported to succeed in the educational system, they proceed forth into the professions and global market force to continue the work, all while leaving a resounding hope for the change, adaptation and survival of future generations (Wheatley, 2017). To summarize the task set forth for the leaders in higher education, Brene Brown (2018) states "...daring leaders who live into their values are never silent about hard things" (p.184).

Recommendations

With the current study's aforementioned findings, conclusions and discussion, as well as the continued concern regarding the 40-60% doctoral student attrition rate (Hunter & Devine, 2016; Lovitts, 2001), there are several recommendations proposed regarding policy at the institutional level, practice within IHEs, and future research inquiry.

In terms of policy recommendations, doctoral program accreditation organizations should implement a required policy for data collection of doctoral students' mental health and well-being. The data collected should include mental/emotional health screenings, identification, services, protocols, and outcomes on an annual basis for every doctoral student upon enrollment and throughout their academic program. The following recommendation would be initiated at the institutional level of leadership, as a means to promote policy and practice changes within IHEs to advocate for the needs of the programs students' overall well-being.

Institutions of Higher Education should review faculty load requirements/job description to include time/load release for student advisement, along with tenure and promotion expectations. Policies should be explored and created by the Provost/ Chief Academic Officer in collaboration with the shared faculty governance to redistribute load requirements for faculty. With the global economic crisis, financial constraints from declining enrollment and sustainability concerns relative to IHEs have led many institutions to increase the annual faculty load requirements. The load increase, cut salary expenditures for IHEs however, faculty are now required to teach more classes, and/or larger class sizes that ultimately reduces faculty-student interactions. The administration within IHEs have realized that it is to their financial advantage to retain students versus recruit new ones (Council for Graduate schools, & The JED Foundation, 2021; Lovitts, 2001). Recognizing the findings from this study about students' sense of connection and concerns related to faculty student engagements, primarily due to the academic culture of productivity, along with support in the literature that there is a financial incentive to retain enrolled students. It is important for the administration to recognize that faculty play a role in the students' sense of belong and require more time not connected to productivity demands. Policy changes to faculty workload requirements hopefully would provide more faculty student engagement, therefore increasing the students' ability to learn, thrive, and complete their degree requirements.

Institutions of Higher Education should integrate mental health support providers and services into the doctoral programs, specific to schools or departments based on the organization structure. Much of the literature supports that IHE support services are struggling to keep up with the demand due to limited staff and budgetary restrictions (Chessman & Taylor, 2019; Lipson et al., 2015; Lipson, Abelson, et al. 2019). This policy and additional staff would provide support to students' as well as faculty who have not been trained or experienced enough to handle a student's mental health concern or potential mental health crisis.

Recommendations for practice, Institutions of Higher Education should implement faculty, staff and administration trainings to promote the development of supportive communication and advising strategies that

build awareness of doctoral student mental health concerns. Utilizing the Substance Abuse and Mental Health Services Administration (SAMHSA, 2014) framework may provide appropriate guideposts for implementation in the higher education system. Doctoral departments should implement community building activities to promote a stronger sense of community for doctoral students. Strategies to create engagements and conversations about mental health concerns could include brown bag luncheons, panel discussion, and symposiums with external experts on mental health concerns, and potential coping strategies. These may be utilized to increase awareness and provide communication that normalizes human struggle and send the message that students' do not have to travel that road silent and alone. Creating community opportunities within departments allow students to share their lived experiences, encourages comradery, and potentially gain new connections that may assist doctoral students.

Recommendations for future inquiry is further research both quantitative and qualitative, specifically on doctoral students' sense of belonging and connection to IHEs, departments, faculty, and peer interactions. Multiple studies may need to be performed in order to gain a clearer sense of individuals' connectivity and how that impacts their mental health, what services (if any) are used and what are the outcomes and/or efficacy of those services. Included in those studies, a look at gender differences and gender identities based on their perceptions of roles, connection and social components of the academic program and how that influences their decisions and motivations for progression and continuation with their programming.

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Semantical Evaluation of Liminality as an Attribute of the Museums` Interstitial Spaces

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Abstract: This paper investigates the liminal characteristics of the museums' in-between spaces as the cultivating context of the cultures and civilizations. Liminality is a term borrowed from anthropology to interpret the features of the museums` in-between spaces. Such mentality considers border spheres and in-betweens as transitional spaces, which transform these joints from merely functional elements of separation and connection into areas of numerous potentials of becoming and engendering. This metamorphosis will create a third space. This research aims to question the features of the space that may enhance the liminal characteristics of the in-between spaces of the museums as the potential spaces of encounter and contact zones. In the current semi-experimental research, liminality's social and psychological status is considered a contributing attribute of the space. This concept is investigated by asking for selected architects` feedback regarding the observed liminal space by combining the semantic differentiation method with a bipolar adjective questionnaire set according to liminal characteristics and an open interview. Successful in-between spaces were evaluated as transitional, layered, temporal, and dynamic, with qualities such as integration, metamorphosis, and uncertainty. It was concluded that the museum's successful liminal spaces are the ones that motivate continuing the journey through the museum while encouraging the visitors to interact with each other and engage with the body of the museum.

Keywords: Semantic evaluation, Liminality, Museum`s in-between spaces

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Introduction

The leading architects are primarily involved in solving the problems regarding the buildings' functional matters and the main physical spaces of the building. Still, they need to address boundary and interstitial spaces as interfaces and separators, which act as joints in the body of the building. In the current research, the terminologies equally used for in-between spaces are boundaries, joints, junctions, transitional spaces, and interstitial spaces, which all relate to the places between two main areas in the museums, such as the lobby, corridor, and hallways.

Today's society, which is in transition, needs to explain renewed relationships based on present society while crossing the traditional world and the relevance of the relations that govern it. In an increasingly open environment that allows for free expression, museums communicate themselves without letting go of their role as the repository of knowledge and authority (Bira, 2018 #4). Architecture can efficiently perform this (Jones, 2017 #6).

The apparent failure to pay attention to social interactions in the design of the buildings and disregard for individuals' feelings while confronting spaces may lead to the possible emergence of a society that has lost the cognitive ability to interact and engage with others optimally. Museums, as social environments for education, knowledge, and dissemination of culture in societies (Arbués, 2014 #2; Marcus, 2012 #3), are the most appropriate contexts for inviting people to interact with each other, understand themselves, enforce social practices and create social identities (Bira, 2018 #4). The museums are the third places that invite interactions and are critical scenes of everyday public life. Human communion through any conversation is the main feature of the space that activates and transforms a place into the third realm of satisfaction and social cohesion, which is an essential element of the good life (Thompson, 2013 #5). Therefore, the necessity of proper museum design that supports these themes is considered one of the most critical and up-to-date issues in architecture. Sociologists have rarely theorized about buildings (Gieryn, 2002 #7). In addition to providing the physical context within which museums exist, museum architecture also provides meaning for the objects and interactions within these 'spaces of encounter and 'contact zones' (Boast, 2011 #10). An object or collection placed in one architectural context appears, feels, and signifies differently when placed in another (Bourriaud, 2002 #9). Regardless of the specific form and the memorial volume of the museum's building and with an intense focus on the meaning and content, it is necessary to progressively develop the concepts of sociology, psychology, and philosophy to design spaces that fit human relationships (Jones, 2017 #6).

In a reductionist view, a museum is the third place (Tate, 2012 #12), and the building of a museum acts as a threshold and a liminal space (Sfinteş, 2012 #13) while 'architecture is the museum' (Giebelhausen, 2008 #11). There are also liminal spaces within the architecture of each museum that translates the boundary and threshold characteristics into three dimensions, in what is called transitory or interstitial spaces (Sfinteş, 2012 #13), which I believe are the most important and frequently overlooked parts remain in-between spaces, which comprise the most critical sections.

Addressing these areas can be crucial because the spaces of transition, due to their liminal nature, are capable of any "becoming" and possess significant spatial potentials due to their flexible structure. Their ability to create social cohesion and integration makes them ideal spaces for fostering interactions. Therefore, it is crucial to adequately explore liminality as it relates to individuals when placed within the spaces. Explaining and expanding these concepts into architecture can open the door to efficient, responsive, human-centered design.

This research aims to discover the spatial characteristics and specifications that the museum's interstitial spaces must acquire to create an elevated level of motivation and interaction in the audience. To determine the subjects' preferences, the aesthetic judgment of humans and their emotional responses in space can be assessed through a

test. A polar questionnaire and interviews with experts will be used to probe the potential characteristics of the interstitial spaces' liminality and understand their features.

Within the current research framework, the status of liminality is first discussed, and then this quality is defined in the architecture of the museum's in-between spaces. Subsequently, the liminal characteristics and dipole traits are questioned by specialists over selected museum spaces with specific features.

This research aims to seek feedback from architects and professionals according to features of liminality derived from the literature review. What are the qualities and characteristics of in-between spaces based on a review of *liminality* literature? How can these features be used in a test to ask about the liminal experience of the people in interstitial spaces of the museums? Concluding that which in-between spaces of the museums have been successful according to the characteristics of liminality? And what architectural features enhanced these liminal attributes? It is a subject that can be covered in future studies.

To do so, I studied several texts on liminality and its characteristics and picked some specific common adjectives most frequently related to a liminal experience's features. Upon investigation of the previous studies and literature review in sociology, anthropology, literature, and psychology, obtained results were gathered in a table representing the qualities and specifications related to the interstitial spaces. Theoretical principles extracted from the library reviews were presented as valuable components in the form of extracted traits related to liminality. I later adopted these adjectives into the format of standard dipole tests to ask the participants for their feelings about the museum's liminal architectural scene. Consequently, the structure of quasi-experimental research was later carried out by combining questionnaires regarding environmental preferences and interviews with architects and specialists in the related field.

Literature Review

Terminologies and Definitions

Originally coined by the folklorist Arnold van Gennep in his book *The Rites of Passage* (1909), this term was subsequently adopted by Victor Turner to describe rites of passage associated with changes of place, state, social position, religious calling, and age. New institutions and customs can emerge due to the dissolution of order during liminality (Turner, 1969). Liminality is the state of being on a threshold during rites of passage, rituals that transfer individuals from one stage of life to another. The purpose of liminality is to divert the person from the routine and habits of social order and to disrupt the existing structure of thought, action, and identity (Turner, 1969).

Liminality in borderlines requires careful management to maximize the potential for transitions and changeover power. The purpose of liminality is to divert the person from the routine and habits of social order and to disrupt the existing structure of thought, action, and identity. "For me, the essence of liminality is to break free from

normal constraints and to overcome the stereotypes of the unattractive structure and cliché (the meaningful structure of everyday life)" (Turner, 1977:68).

Liminality is the "early stage of the process": thus, it represents temporal features, signifying a beginning and an end, but also representing time over a spatial and transitory process (Andrews and Roberts, 2012). The threshold concept in this research is related to spatial deployment and refers to occupying a position on both sides. Since architecture is an objected representation of the architectural spatial mind, its dialectics is based on the biological logic of humans and the environment. Therefore the threshold and boundaries are the outcome of the builder's action of mind which needs differentiation and distinction between the subjects for the proper function of mind and understanding of realms. In architecture, liminality refers to a transitional space - "neither one place nor another, but a third space in-between." As a result, a sense of awakening and separation from conventional life are the goals of the in-between space, which serves as a foundation for alternative social interaction that encompasses different rules, values, and relationships (Atkinson, 2012).

By such an approach, thresholds and boundaries are no longer serving as spaces whose identities are lent from previous and succeeding but as genuine spaces that carry out a fundamental role in the architecture occurring before and after them. The authors like Jonathan Hill and Gianni Vattimo attributed. The relation between liminality and margin in contemporary art to architecture. These authors define liminality as the conceptual and long-term relationship between individuals and spatial environments (Hill, 2003). Alterity, in phenomenology, is usually conceived as the entity against which identity is constructed, and it implies the ability to distinguish between self and not-self and to assume that alternative viewpoints exist. Emanuel Levinas developed the concept in several collected essays (Levinas, 1999).

The term "Third Space" was coined in the 1980s by the urban sociologist Ray Oldenburg. The Third Places are the informal public gathering places that constitute the backbone of civil society. These places bring people together, allow them to talk and relax, rejuvenate them, and create special bonds (Mehta et al., 2009, p. 13). According to Bhabha, hybridity is a 'Third Space' fraught with ambiguity. In addition, some describe it as liminal about its place in history, culture, and society (Abou-Agag, 2021 #14). Therefore, the task of the in-between space is to create a sense of awakening and thus to be able to provide adequate separation from conventional life and be an input to alternative social interactions where different rules, values, and relationships are valid (Atkinson, 2012). In this research, the terms In-between space, Liminal space, Interstitial space, and Transitional space are all used similarly to refer to the spaces between other spaces in the museum, which connect and separate the places. They have the potential of liminality and alterity and act as the third places. Such as lobbies, corridors, hallways, stairs, and ramps.

The Quiddity of Interstitial and Transitional Space

The spirit of the times and the living conditions of people of every age have always been the most influential factor in organizing architectural space. Therefore, given the constraints of today's world in which contemporary

human is confronted with diversity, intuition is regarded as the quality of the present age. The conditions of the current generation have placed humans in the intermediate position and made their living space an intermediate one. The interstitial space is where the phenomena co-occur (Shaigan, 2002). In-between space is a critical element in the presence or absence of a crisis in architecture and urbanization, which woefully has been ignored, and some hasty actions have degraded these spaces (Islami et al., 2011:61).

Furthermore, granting to the results of previous research, the interstitial space has been considered an influential factor in enhancing social interactions, combining city activities with architecture, improving spatial circulation, increasing the dynamics of the design, and respecting the hierarchy (Hoseinzadeh, 2013:11). Liminal zone (Astana) points to the continuity of a transitional and connective domain, which indicates how bounded form is associated with a broad field without boundaries implying the possibility of their frequent interaction and exchange. Therefore, the in-between space represents the third place that comes from separating or integrating the two spaces (PeirovOlia, 2017).

One of the interstitial space's most prominent features is the transition's character. Transition - A state of being, in architecture, is defined as a link or connection between two enclosed spaces. The architectural space without transient spaces is incomplete (Deshmukh, 2009). These spaces provide an opportunity to intervene and create an interstice that re-engages people and forms the passage through repetition or pauses. They might be programmed or designed, or they can be left unused, but both types of spaces are in a transparent and continuous state and thus become "transfer locations." The Interfaces between two defined spaces are even more critical in planning.

A properly developed interstitial space is where one can stop, relax, and determine the distance between people and, in other words, encourage social activities and interactions, but equally confer individuals the right to decide. In her book, Jane Randle explores how the architectural space is recorded in psychoanalysis as well as the concept of architecture as a *social condenser*, a conceptual construct of the way that links material space and communal relations (Rendle, 2016)

Particular attention to the contexts, environments, and needs of the community are the forces required to design a building that is both a sphere for transition and interaction. This place is philosophically and programmatically designed to promote urban life by supporting social cohesion and strengthening civilization. The building can serve as an intervention for social unity, while the most exemplary public structure for this purpose is the museum, and the most vital parts are in-between spaces.

There are several ways in which architects can develop in-between spaces. For example, a boundary can sometimes be seen in the physical components that define it. At times, this relationship appears more predetermined, such as in the layout, plan, and first configurations of the space by orthogonal drawings, which occurs during the early stages of design. The qualities that make a difference in the shaping of spaces in the early stages of design can refer to geometry, proportion, materiality, or any other physical and environmental

attributes. There are also times when the boundary is less tangible and is determined by environmental factors such as light, temperature, and odor. Designing transitional spaces through the circulation system, the space geometry, shape, alternating materials, etc., represent the first approach to configuring physical boundaries. Next are the physical components that make up the border, like the ceiling, floor, etc. These elements have traditionally separated the spaces and shaped borders. Environmental factors (such as light, temperature, and humidity) are equally effective in establishing boundaries.

In-between Space in the Museum

Museums must be capable of transforming themselves in today's innovative world and demonstrate their tendency to act as cultural anchors and reference points for new social actors, *the potential audiences* (Brown, 2018 #23). Museums are essential for their collections and reflections on the objects, knowledge, and interpretations they offer about heritage care. Within a museum, an object loses its original meaning, while the surrounding environment gives it a new one, and in this sense, they are polysemic.

It is possible to determine what information an object carries and transmits from the museum building, its architecture, and gallery design (for example, lighting, wall color, cases, and stands), as well as the routes (Navarrete, 2016 #15). A museum's architecture can also be viewed as a medium for spatial storytelling, which is expressed spatially and cognitively (Lu, 2017 #16). The architectural space creates specific engagement using spatial layout and circulation, form and symbolization, unique lighting, and material qualities. These components construct a tangible cultural artifact that preserves records and creates various modes of experience for museum visitors (Lu, 2017 #16).

A museum's ability to instantly discover the narratives and propositions of others enables it to serve as a context for reflecting knowledge, beliefs, values, and attitudes. The museum site, its architecture, exhibition spaces, and the urban or natural surroundings are resources that should be exploited with novel strategies for social dialogue. The ability to target reflections and reactions has suggested various options for how to look at the cultural heritage it preserves, what Homi Bhabha calls "the third space of enunciation." In *The Location of Culture*, he uses concepts such as mimicry, interstice, hybridity, and liminality to argue that cultural production is always most productive where it is most ambivalent (Bhabha, 2012).

The "interior space" is translated and discoursed as border and edge— the "intermediate space" that carries the burden of cultural meaning — by the discovery of this third space, we can escape from polar politics and become "the others" of ourselves. Museums, like other cultural institutions, must strive not only to be able to present otherness but also to acknowledge the limitations of interpretation and translation. In their role as interpreters and mediators, they can recognize the additional transparency and form of cultural expression and solidarity in all societies by promoting the "rhizome identity" (Glissant, 1996). As Martin Barbero points out, one of the roles of educational and cultural institutions should be to develop strategies to help citizens deal with conflicts and differences and others and behaviors that lead to cultural interaction and knowledge (Barbero,

2002). Museums can be tested as "contact areas" (Clifford, 1999) Or developed as third spaces, where both sides of the threshold are unfamiliar and diverse groups can experience a similar practice of discovery (Edgar, 2006).

For museums, this means engaging between cultures, education, and cultural literacy, which is the ability to understand, respect, and interact with people from various cultural backgrounds, which is essential for citizens' participation in pluralistic societies (Anderson, 2011). Different "regimes of representation" reveal different assumptions and perceptions of cultural alterity, suggesting that not all Others are equal. Still, there are different categories of others and gradients of cultural alterity, according to Varruti. The last generation of museums displaying other cultures seems to transcend this dichotomy, striving to open up an in-between space where cultural identities are neither past nor far away but rather multiple, fluid, ever-changing identities that are here and in the present. Perceptions of cultural and territorial belonging overlap and intersect, creating new coordinates of identity where ethnic communities can maintain strong links with their cultures of origin and be fully part of the multicultural society in which they live (Varutti, 2011).

Concerning the in-between spaces in museums, we consider the spaces between boundaries to be liminal and use their concepts as the material of sociological collections or networks of relationships between people, spaces, and things (Mulcahy, 2017). The real action is within what is "in-between" (Cooper et al., 2016, p. 245). The boundary is a vague inner concept. Because the border both separates and connects. "In the play of Liminality, no attention is directed to the final situation. Liminality is no less than a situation in which a person occupies or is operating and performing—for example, becoming a person who is Learning in the Museum"(Munro, 2000).

In shaping museums and cultural areas, the basis of design is to create a possible path in which the process of perception, cognition, experience, and interpretation of space is formed (Gendell,2000). Defining architectural elements may strengthen the features of liminality and alterity in a subject area. To be able to set standards and define elements, it is required to discover the space with particular tools. In most museums, this is done through collections, exhibitions, and events that are being managed in museums. However, the characteristic of this research is to go back to the museum's structural physique to examine the body of a museum in this role and to test the materials in that context.

Methods

Charles Osgood`s test defines the conceptual meaning of objects with a semantic differentiation (SD) method. It is one of the most widely used scales used in the measurement of attitudes by measuring the connotations of words or concepts using factor analysis of large sets of semantic differential data, presenting pairs of bipolar, or the opposite, adjectives at either end of a series of scales (Albertazzi,2013). The benefits of this approach over using separate scales for each bipolar pair of adjectives are apparent. The cluster approach seems to have been preferred by Osgood himself (Doyle, 2010, p.27).

The SD is primarily applied to psychology among the most popular scaling techniques in social and behavioral sciences. However, it is also used in linguistics, sociology, marketing research, and other empirically oriented fields. By analyzing the similarities and differences between respondents' ratings of concepts, one can understand the connotative meaning of concepts (Ploder, 2015, p.15). A proper way of obtaining the implicit and indicative meaning of an object, space, or concept is to use the two-point scale in which an adjective at each pole defines the relationship between the concept and the qualifier (Hunter, 1973).

Applying these relationships to psychological data can also link the physical characteristics of surfaces and psychological effects. People can have an overall understanding and sometimes detailed comprehension of the qualities within space and get closer to which qualities are preferred for the liminal in-between spaces of the museums. The core of such a test in this research is to determine the diverse dimensions of the architectural space. The words that are selected for ranking and the nature of the space and the building that is being graded are influenced by the meaning that is extracted. In addition to the attributes derived from Osgood, this test also borrows from the attributes adapted from the theoretical background of the research based on the qualities of the liminal space. The dimensions of liminality are the part that this research added to Osgood's test to ask the professional participants of this study about the characteristics of interstitial space of the museum and find out how the architects notice it in the photos from the selected architectural spaces of the museums.

Hence, an evaluation test was conducted with ten architects analyzing photographs of 18 museums based on attributes such as evaluation, potency, activity, and liminality dimensions, which were taken from the theoretical foundations of the study. Bipolar adjectives indicated these attributes, and the places which gathered more liminal characters from the examinee's choices would be called the appropriate transitional museum's spaces. According to the professional participants' comments, the liminal characteristics that can imply the architecture of a museum's in-between space, which also makes it a successful one, are being transitional, layered, temporal, and dynamic, with qualities such as integration, metamorphosis, and uncertainty (Motamedi, 2021).

According to the attributes mentioned above, questionnaires were given to individuals, and they were supposed to choose from the table of bipolar attributes, which is shown in Table 1.



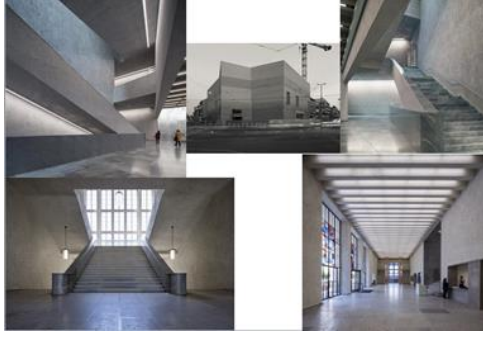


Table 1. The Questionnaire on Bipolar Characteristics applied in the Current Research



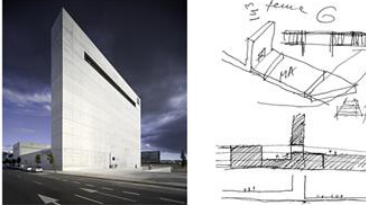




Dimensions of Evaluation	Dimensions of Potency	Dimensions of Activity	Dimensions of Liminality	Dimensions of Liminality
Beautiful-Ugly	Rough - Delicate	Energetic-Lethargic	Temporary - Permanent	Irregular-regular
Pleasant-Unpleasant	Stiff - Soft	Stressed-Relaxed	Separation-Connection	Chaotic-Ordered
Harmonic-Unbalanced	Sturdy - Flexible	Dynamic-Static	Transfer-Residence	Metamorphosis-stagnation
Meaningful-Meaningless	Strong - Weak	Boring-Interesting	Integrated-Separated	Separation - Accumulation
Happy-Sad	Feminine-Masculine	Warm-Cold	Passage-Settle	Layered-Single layer









At the same time, slides containing in-between spaces from 18 selected interior spaces of museums were shown to the participants. Participants were asked to comment about each image they observed based on the choice of bipolar attributes (one of each pair). For the Dimension of liminality, the first adjective is considered a liminal characteristic.

Table 2. Demonstrates the selected in-between spaces of the museums and the slides shown to the participants.

Table 2. The Slides of the Museum's Transitional Spaces presented to the Participants

Images	Dominant materials & feature	Museum Name
	Clay, Adobe, Terracotta	Site Museum of Paracas culture
	The mixture of glass and exposed concrete	China's new folk art museum
	Glass and light grey colored concrete	Kunst Museum
	Tinted tone stone and glass pyramid volumes	Miho Gallery
	Glass with bright stone, grey stone	Fan Zeng art museum in china

	<p>Natural wood color, sliced vertical wood</p>	<p>Sonorous Museum Copenhagen</p>
	<p>Dark colored steel</p>	<p>Allmannajuvet zinc mine</p>
	<p>White color, Monochrome</p>	<p>The MA: Andalusia's Museum of Memory</p>
	<p>White color, Monochrome</p>	<p>Corning museum of glass</p>
	<p>The blend of red and blue colors (Harmonic colors)</p>	<p>AD Classics: São Paulo Museum of Art (MASP)</p>
	<p>Cream-pink stone/ Glass separator</p>	<p>Museo Jumex</p>
	<p>The blend of grey and red color/The cream color with longitudinal axis/Natural wood color</p>	<p>Xi'an Westin Museum Hotel</p>

 	<p>Emphasis on the white vertical elements/ /mixture of light concrete and dark wood</p>	<p>Museum of modern literature</p>
 	<p>Glass/white color/dark colored wood/the blend of glass and white color</p>	<p>Louis Vuitton Foundation</p>
	<p>The light grey colored concrete /glass/natural wood/light concrete</p>	<p>Nadir Afonso Contemporary Art Museum</p>
	<p>The blend of wood and glass/ stone and glass/White composite material</p>	<p>Smithsonian national museum of African history and culture</p>
	<p>The blend of light concrete and glass</p>	<p>Arts center- Casa das Musdas</p>
	<p>Black and white</p>	<p>Museum MAAT</p>

Discussion

Discovering the spatial characteristics and specifications the museum's interstitial spaces should acquire for creating an elevated level of motivation and interaction among the visitors has been the aim of the test of this study. To determine the subjects' perception of space, their judgment, and emotional responses in space, a semantic dimension bipolar test was assessed. A polar questionnaire and interviews with experts were used in this research to probe the potential liminal characteristics of the museum's in-between spaces and understand

their features. Within the current research framework, after a decent discussion on liminality and how it relates to in-between spaces of the museums by referring to the literature review derived from diverse disciplines (Motamedi, 2021), the liminal characteristics and dipole traits are questioned by specialists over selected museum spaces with specific features.

Common adjectives most frequently used related to a liminal experience's features were chosen from previous studies. Upon investigation, obtained results were gathered in a table representing the qualities and specifications related to the interstitial spaces. These adjectives were adopted into the format of standard dipole tests to ask the participants about their feelings about the museum's liminal architectural scene. The percent of liminality was calculated based on an average of the percent of liminal characteristics identified by all participants for a single building. For example, if all participants rated one museum as having all dimensions of liminality present, it would be noted as 100 percent liminal. The liminal characteristics were the first called one in each bipolar set. Dimensions of evaluation, potency, and activity are considered in the results when it was mentioned most frequently by the participants.

Results

Paracas Culture Museum was reported frequently as beautiful, pleasant, harmonious, meaningful, sad, and pure, referred to as evaluation dimensions. On the other hand, it was mostly reported as rough, soft, flexible, strong, masculine, loose, relaxed, static, dull, warm, and slow. It also reflected 45% of liminality characteristics. The Chinese Folklore Art Museum (Combining concrete and glass in the in-between spaces) was frequently mentioned as unpleasant and ugly while gaining an 80% score in dimensions of liminality. Kunst Museum (with the dominance of concrete material in the stairs and ramps) was reported as beautiful, pleasant, harmonic, pure, rough, stiff and strong, masculine, energetic, dynamic, tense, attractive, warm, and fast, according to the most votes. It accounted for dimensions of a liminal space according to 77% of the votes.

Miho Gallery Museum (with Glass and Metal material and Pyramid Volumes) was reported to have features related to liminality by 45% of the participants. The predominant characteristics reported from the evaluation dimensions were pleasant and pure, bright, original, expensive, pleasant, pure, attractive, and lovable.

Sonorous Museum (with raw wood material): Loving, bright, soft, warm, light, original, and pleasant, and the number of liminal properties was reported to be 25%.

Zinc Mine Museum (with Metal material): Cold, strong, expensive, pleasant, pure, sophisticated, attractive, and lovable, with 42.5% of the liminal characteristic scores.

The Andalusia Museum of Memory (with a single material of white concrete): bright, transparent, soft, light, original, elegant, clean, new, pleasant, relaxed, attractive, and lovable, and received a 60% rating in liminality.

All of the museums surveyed with single-white materials were reported the same in scoring, and in terms of liminality, they were ranked as follows: The unity Museum 52.5%, the Heydar Aliyev Museum 75%, the Louis

Vuitton Foundation 60%, The Modern Museum of Literature %45, Corning Museum of Glass 85%. National Museum of African American History (Smithsonian) was recognized for its dominance of glass material in the in-between space: bright, new, pleasant, pure, attractive, and 80% liminal. Regardless of geometry, volume and plan, and by focusing on materials as the morphologic and main interplaying factor and considering the properties of liminality, we asked the participants to comment only on the materials used in the space, and the overall results were as follows:

Glass and concrete can be suitable options for in-between spaces of the museums as the participants accounted them as having the potential for arousing senses related to liminality and enhancing the transitional features of the in-between spaces. In a contrary sense, bricks and wood shall obtain an efficient option if the design aims to foster a feeling to overcome the stress of the visitors on the verge of experiencing the liminal zone since they were mentioned to reduce the stress. It was also indicated that individuals' attention was attracted whenever the material was employed in an unconventional position or contrary to people's mental stereotypes and clichés, and interaction with that particular space in the museum increased.

Conclusion

As a brief representation of the results, the museum's in-between spaces, which received the highest scores in liminality, will be pointed out. The Chinese Folklore Art Museum (Combining concrete and glass in the in-between spaces) was frequently mentioned as unpleasant and ugly while gaining an 80% score in dimensions of liminality. This may relate to the fact that not all pleasant and positive emotions regarding space are compatible with liminal characteristics. They are suggesting that negative feelings can also enhance the power of liminal zones in the transitional spaces of the museums.

Kunst Museum (with the dominance of concrete material in the stairs and ramps) was reported as beautiful, pleasant, harmonic, pure, rough, stiff and strong, masculine, energetic, dynamic, tense, attractive, warm, and fast, according to the most votes. It accounted for dimensions of a liminal space according to 77% of the votes. This indicates that being energetic and dynamic was in congruence with the liminal potential of the space.

The Heider Aliev museum scored 75% in the liminality attributes, which shows a high degree of liminality. The participants of the study found it transient and fluid. Bright, new, pleasant, pure, and attractive are the other most repeated adjectives people use to describe this space.

The Corning Museum of Glass scored 85% in liminality potency, and it was also referred to as bright, transparent, soft, light, original, elegant, clean, new, pleasant, relaxed, attractive, and lovable.

The results of these two museums suggest that a minimal approach with monochrome colors can be practical for designing museums in-between spaces.

Regardless of geometry, volume, and plan, and by focusing on materials as the morphologic and main interplaying factor and considering the properties of liminality, we asked the participants to comment only on the materials used in the space, and the overall results were as follows:

- Glass and concrete are often suitable materials
- Brick and wood are viable options
- Unconventional material uses are helpful

This study is a generalizable model project and can be tested in other museums' transitional spaces. This investigation aims to propose a method of examining the efficiency of the museums' liminal boundaries. Future research can focus on testing other museums for more reliable results.

Also, the next question that should be followed is which attributes in the space have caused the architects to vote for these characteristics of the space. In Other words, what physical potentials of the architectural space have caused the people`s choice of dimensions of evaluation, Potency, Activity, and liminality in these transitional spaces of the museums? It can be about the material, geometry, color, or any other architectural attributes and specification that has a crucial role in defining a space and arousing feelings in visitors in the museum`s in-between spaces.

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The Deficit in Visuo-spatial Working Memory in Dyslexic Population? A Systemic Review and Meta-analysis

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Abstract: Development dyslexia (DD) is a common language disorder, which significantly affects children. Despite having ordinary intelligence, dyslexic people struggle with reading, writing, and comprehension in their native tongue. It is still unclear whether dyslexic kids have difficulties with visuo-spatial working memory. Using meta-analysis, this gap was filled. Applying a Boolean search on Web of Science was necessary to find the pertinent papers. Thirteen studies were analyzed. The average, standard deviation, and sample size for each task were extracted. There were large effect sizes between children with DD and their age-matched peers in terms of their visuo-spatial working memory. The findings imply that visuo-spatial working memory deficiencies in dyslexic children indicate that dyslexia might exhibit domain-general characteristics. We discovered during our research that the type of language used, and the testing procedure could have an impact on the test outcomes. Therefore, future research should focus on the type of tasks or language.

Keywords: Development Ddyslexia, DD, Visuo-Spatial Working Memory, Working Memory, Meta-Analysis

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Introduction

Working memory is the cognitive system where information is stored and processed temporarily during complex cognitive tasks (A. Baddeley, 2000). Working memory has three subcomponents, namely the central executive (CE), the phonological loop (PL), and the visuospatial sketchpad (VSSP). The PL and VSSP are the two slave systems, which are also called short-term memory. The supervisory system is CE which has responsibility for controlling and manipulating the information stored in two subordinate systems (A. Baddeley, 1996, 2003), which is important in skills such as chess playing (A. Baddeley, 1992). It is usually related to the frontal lobe functions (A. Baddeley, 1996, 2003). The PL is dedicated to the temporary storage of verbal

information as a peripheral system, and the VSSP is a limited capacity slave system designed for the temporary storage of visuo-spatial information (Moura et al., 2015).

It has been suggested that working memory plays a crucial role in language processing (Gray et al., 2019). Verbal working memory has long been studied, whereas visuo-spatial working memory had not attracted great attention until the model of working memory proposed by Baddeley (1986). According to this model, visuo-spatial working memory (VSWM) is associated with perceptive-motor tracking (A. Baddeley et al., 1973; A. D. Baddeley & Lieberman, 2017), planning and preservation of motion sequences (Quinn & Ralston, 1986; Smyth & Pendleton, 1989, 1990), visual image generation and memory (A. Baddeley et al., 1973), etc. Assessment of the working memory capacity comprises an important part in measures of children's cognitive capacity (Gray et al., 2019). Indeed, impairment of WM has been observed in many language disorders, such as in developmental language disorder (DLD) (A. Baddeley, 2003; Ebert & Kohnert, 2011). Developmental dyslexia is arguably also one of the disorders which can be defined via working memory capacity (Moura et al., 2015).

Developmental dyslexia (DD), as a neurological disorder of genetic origin, has specific effects on reading (Galaburda et al., 1985). Dyslexic people have difficulty in reading, writing, and comprehension in their native language, although they have average intelligence. The growing research provides evidence that dyslexic children show deficits in verbal working memory (Menghini et al., 2011; Swanson et al., 2009; Wang & Gathercole, 2013; Willcutt et al., 2005).

However, various recourses are utilized in visuo-spatial cognition and the auditory-verbal domain (Duff & Logie, 1999). Indeed, there is no consistency regarding whether the DD population have impairments in VSWM. Some studies evidenced the children with DD had substantial impairments in processing and memorising visuo-spatial materials (Menghini et al., 2011; Swanson et al., 1996, 2009; Wang & Gathercole, 2013). Tracy's (2017) research has shown that dyslexic children rely more on visual skills in spelling. Due to the conclusion, we can infer the children with DD have minor impairment on VSWM. Other studies found no significant deficit in VSWM of the DD population (Jeffries & Everatt, 2004).

To summarise, challenging to our understanding is by the inconsistencies across studies. A meta-analysis was conducted to address this research gap to analyse the statistical data and expand conclusions drawn from studies with small numbers of participants. Meta-analysis provides greater statistical power and more confirmatory data analysis to extrapolate to the general population. To our knowledge, Swanson studied this topic with a meta-analysis in 2009 without an absolute answer. Moreover, recent research on the VSWM capacity of the dyslexic population still has not offered a definite conclusion. Therefore, a new meta-analysis is indispensable to explore whether dyslexic children have deficits in VSWM. Hence, the current study investigated whether dyslexic children have deficits in VSWM than their typically developing children. It was hypothesized that the VSWM capacity of a healthy population is better than the of dyslexic children.

Method

Inclusion Criteria

- 1) Children with Development Dyslexia (DD) were included, who should previously be diagnosed with DD by experts such as child psychiatrists, developmental pediatricians, psychologists or child neurologists, whose score at reading fluency and accuracy measure was lower than the other children at the same age.
- 2) A group of typically developing control (TD) was included, with either age or language skills matched.
- 3) Participants in the original study should be under 18.
- 4) There were no restrictions regarding the participants' country, race, gender, and publication language.

Search Methods for Identification of Studies

Database

Due to time and effort limits, studies were identified only in Web of Science. Web of Science is an extensive, comprehensive, multidisciplinary database of core journal literature indexes, including science, social sciences, and the arts and humanities.

Boolean Search Phrase

We used Boolean search strategy to search for relevant records. A series of synonyms used to refer to DD and VSWM were included in the Boolean phrase to find the broadest possible range of research. It excludes research terminology, acquired language difficulties, case studies and studies on adults. The search terms are listed below:

(ALL = ("developmental dyslexia") OR ALL = (dyslexia) OR ALL = (DD) OR ALL = (dyslexic)) AND (ALL = (visuo-spatial working memory capacity*) OR ALL = (visual working memory capacity*) OR ALL = (visuo-spatial working memory measure*) OR ALL = (visuo-spatial working memory assessment*)) NOT ALL = (comorbid*)

Data Collection and Analysis

Selection of Studies

To select appropriate articles, the inclusion criteria were applied. We first scanned the titles and abstracts of the identified records and then read the full texts of the remaining articles. The bibliographies of the studies which were included were read carefully for additional references.

Reliability of Study Selection

The first author selected the abstract and the full text independently. The second author completed the examination of the studies.

Data Extraction

Data from the 13 selected studies were entered into a spreadsheet (see Appendix A) guided by the PRISMA statement (Moher et al., 2009). The characteristics form included general information from each study (e. g. first author, publication year, language, and country of study), age and inclusion criteria of the DD population recruited, and task for VSWM assessment.

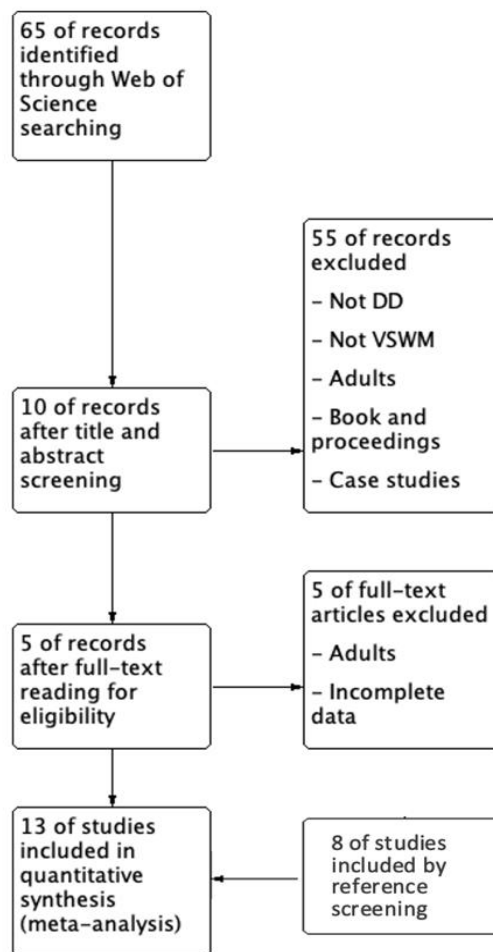


Figure 1. The Sections are processed by a Flow Diagram

The data necessary for the computation of effect sizes were extracted at this stage: the mean, standard deviation, task type, control type and sample sizes of at least one group of children with DD and a group of controls. At the same time, at this stage, we identified missing data and further excluded 21 studies. This data extraction yielded 17 research findings from 13 studies. The results are summarised in Appendix B.

Validity Assessment

The data extraction grid also included a quality assessment section according to the Critical Appraisal Skills Programme list based on the cohort studies (Critical Appraisal Skills Programme, 2017). The results of the validity assessment are shown in Appendix 3.

Computation of the Effect Sizes

Hedge's g was used to calculate the effect size for each research finding (Borenstein et al., 2021). In the current meta-analysis, the DD group mean was always subtracted from the TD group mean. To maintain consistency in the meta-analysis, when the number of errors were used to indicate the scores, inverted mean scores (e.g., $M = 1$ becoming $M = -1$) was used as recommended by Lipsey and Wilson (2001).

Data Analysis

The data were analyzed using the Review Manager (Version 5.4; The Cochrane Collaboration, 2020.)

Assessment of Heterogeneity

Heterogeneity refers to the difference in effect size among the study samples. Following Tawfik (2019), an indicator of heterogeneity is I^2 , together with the Tau^2 , its p-value, and Chi^2 . It is expressed in the percentage of total variability attributable to heterogeneity. Indicative I^2 values of 25%, 50%, and 75% were used to benchmark the studies' heterogeneity as low, moderate, or high (Higgins, Thompson, Deeks, & Altman, 2003).

Assessment of Reporting Biases

Following Tawfik (2019), publication biases were checked using funnel plots. Asymmetry in the funnel plot would suggest a significant publication bias.

For all presented analyses, a sensitivity analysis was performed to examine the impact of the potential outliers on the effect size estimates and heterogeneity. Removing each research from the model, the model was applied to all other studies. One outlier was indeed discovered: when Attree (2009) was removed from the model, the results were changed significantly. Hence, this article was removed from the analysis.

Choice of Statistical Model

Given the high heterogeneity of the studies included and chosen a random-effects model to conduct the statistical analysis.

Results

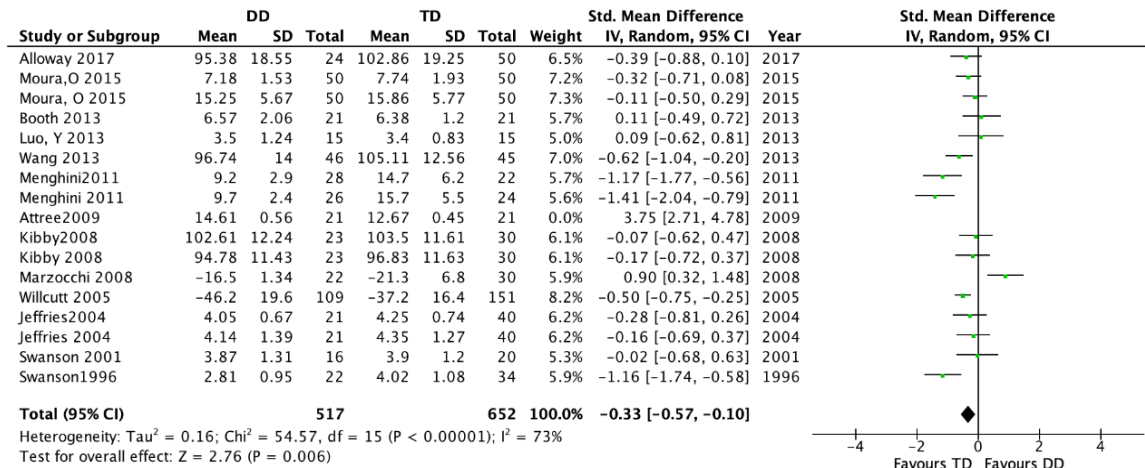


Figure 2. Random Effect Model Forest Plot for Comparison between DD and TD

From figure 2, we can see 16 studies and their respective OR (95% CI). The random-effect model revealed a significant effect ($Z = 2.76$, $p = 0.006$) and a large effect size indicating that the DD group perform worse than their TD peers (OR = -0.33, 95% confidence interval (CI) [-0.57, -0.10]).

However, heterogeneity was large ($I^2 = 73\%$), $Tau^2 = 0.16$, $p < 0.00001$, indicating unidentified sources of variability. There did not detect publication bias (see figure 3).

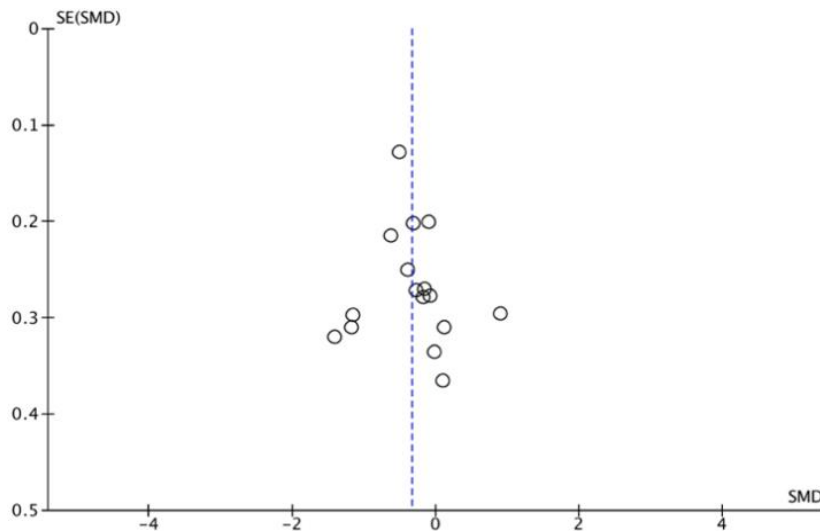


Figure 3. Funnel Plot of the Publication Bias for Comparison between DD and TD

When the two studies with Chinese were moved, from figure 4, the random-effect model a significant effect ($Z = 2.51$, $p = 0.01$) and large effect size in favour of the DD group (OR = -0.33), 95% confidence interval (CI) [-0.60, -0.07].

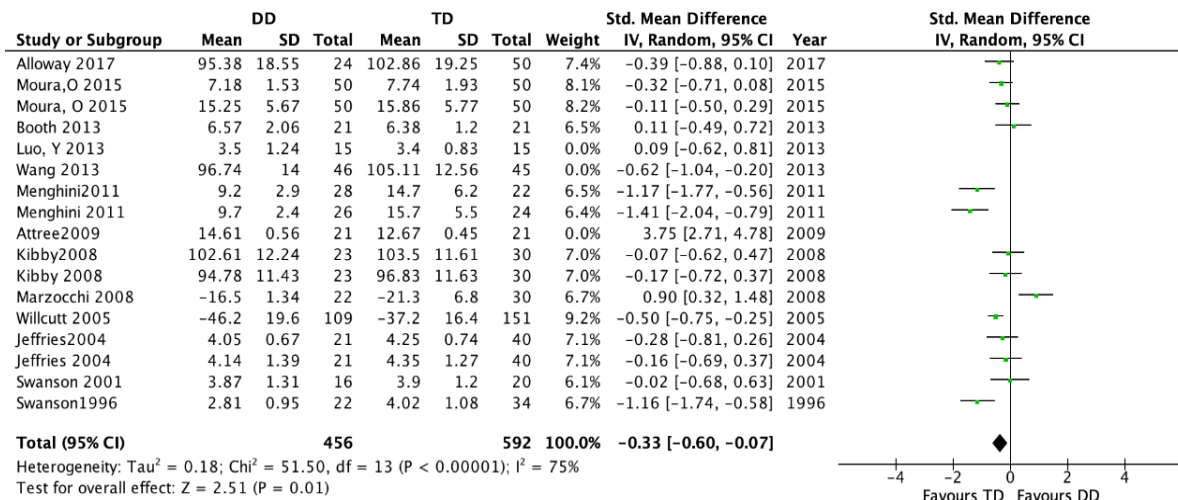


Figure 4. Random Effect Model Forest Plot for Comparison between DD and TD Except for Chinese Speakers

From the figure 5, heterogeneity was large ($I^2 = 75\%$), $Tau^2 = 0.18$, $p < 0.00001$, indicating unidentified sources of variability. There did not detect publication bias (see figure 5).

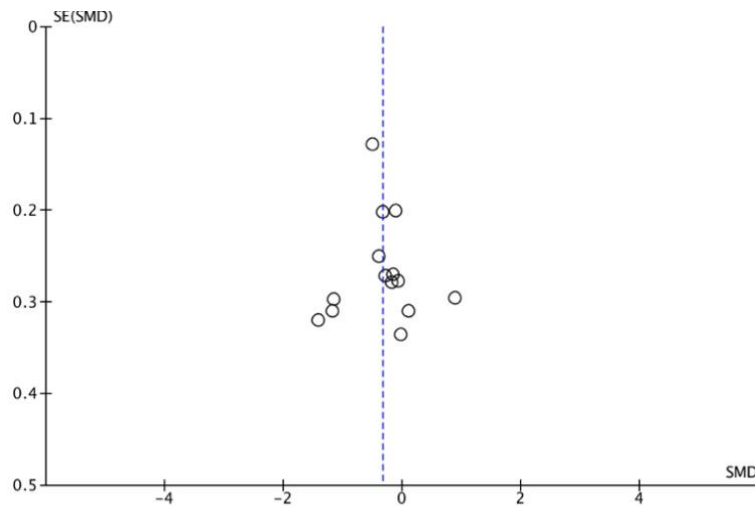


Figure 5. Publication Bias Funnel Plot for Comparison between DD and TD Except for Chinese Speakers

Discussion

To evaluate whether dyslexic children have impairments in VSWM capacity, a meta-analysis was conducted. As predicted, the significant effect size indicated that DD children performed worse in VSWM than healthy people. To assess the influences of different languages in VSWM, a subgroup analysis was applied. Both children whose L1 were alphabetic language and Chinese L1 children with dyslexia displayed a worse score in the VSWM tests.

The main finding in current studies is that dyslexic children have impairments in VSWM, which is inconsistent with the previous meta-analysis by Swanson (2009). This result indicates that dyslexic children also have

impairments in VVSP, suggesting that DD might be a domain-general disorder. This possible explanation coincides with previous studies on the Chinese dyslexic population. Chinese is a logographic language, and Chinese experts proposed that the Chinese dyslexic population has impairment in PL, which has been studied in the western country, and in VSWM. In our research, there are two studies on Chinese dyslexic children. The subgroup analysis found the consistent result that Chinese dyslexic children have impairment in VSWM no matter the language.

However, the research by Attree in 2009 was found to be an outlier. The research used a virtual reality test, which is a different experimental method from traditional paradigms. Virtually reality (VR) test assesses children's spatial memory in a real-life situation with VR technology (Attree et al., 2009). As the authors argued, a possible explanation could be that the dyslexic population might perform better on tasks that simulate the real world.

Subsequent studies also revealed no statistical difference in performance between dyslexic and healthy university students in VR VSWM tests (Kalyvioti & Mikropoulos, 2013). This effect from the VR technology could result from the enhancing presence, the multisensory approach and the positive attitude that the children experience was recorded while using VR. Hence, VR tests are more adaptable for children (Kalyvioti & Mikropoulos, n.d.). VR tests are easy to understand and perform, leading to more accurate data. Whether testing methods influence the performance of dyslexic children deserves further investigation.

Conclusion

In conclusion, our results demonstrated that compared with TD peers, dyslexic children have deficits in VSWM. However, whether language or task influences the results still needs further investigation.

Recommendations

One limitation in our study is that we only researched in one database, and thus, the data we collected was not comprehensive. Regarding whether dyslexia children have impairments VSWM, we still need more evidence to offer a definite answer.

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Developing Museum Education Activities for the Social Studies Course and Evaluation of their Effects on the Academic Success of Students

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Abstract: Our main goal in our study was to enable students to take an active role in teaching social studies. With the work done in the process, it was tried to raise awareness about museums and to explain how valuable museums are for a new perspective on education and most importantly for the social studies course. In our study, a 2X2 split-plot mixed design was used. In the quantitative part of the study, dependent and independent variable measurements were made on the experimental and control groups. In the qualitative part, semi-structured interview technique was applied. The participants of the research were carried out with 50 people in a public school in the center of Gaziantep in the 2020-2021 academic year. The quantitative data of the research were analyzed with the SPSS 22.00 program. Qualitative data were evaluated by descriptive analysis method. In our study, which was prepared on the basis of the achievement "discuss the contributions of the scholars who grew up in the Turkish-Islamic civilization to the scientific development process"; One week before the application, pre-tests were made to the experimental and control groups, and then the teaching activity was applied in the classroom by adhering to the curriculum. In addition, a museum tour activity was carried out with the experimental group. Afterwards, the post-test was applied to both groups. In the last stage of the research, semi-structured interviews were conducted with 8 students. As a result of the research, it was determined that museum education, which is one of the out-of-school learning environments for the social studies course, improved the course success level of the students in the experimental group.

Keywords: Social Studies, Museum Education

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Introduction

In this part of our study titled "Development of Museum Education Activities for Social Studies Course and

Evaluation of the Impact of Students on Academic Achievements", which plans to actively involve students in the process in the social studies course: Information about the problem situation, the purpose of the research, the assumptions and limitations of the research will be given and the relevant topics will be evaluated.

Museum and Social Studies

It would be appropriate to give some examples that attract attention abroad about the concept of museum education, the importance of which we often express in the educational activities in Turkey, in terms of comparing our country and its sources abroad. For example, through the Museum Pedagogical Center, which started to operate in Germany in 1973, attention has been paid to the coordination of school programs with special programs that are applied simultaneously in different 14 museums both in historical places and in 14 different museums and created in digital environments. Individuals at different school levels are provided with excursions, information, discussions and workshops under the supervision of a guide at pre-planned times (Akman et al., 2022a; Arabacioglu, & Okulu, 2021; Massarani et al., 2022; Öztürk, 2021; Öztürk, 2021a; Öztürk, 2021b; Öztürk, Türe, & Yağlıcı, 2021; Susuz, 2021a; Şar and Sağkol, 2013; Temirton, Kharipova, & Kistaubayeva, 2023; Türe, & Ozturk, 2021; Uztemur, Dinc, & Acun, 2019). The German Museum Pedagogical Center carries out its activities in coordination with the educational programs implemented in the schools and the programs implemented in these schools include museum visits that are decided to be implemented at least twice a year (Abacı, 1996). Social Studies program implemented in our country; The reflection of the innovations made in the field of education to this system that centers on the student brought by the constructivist approach and rejects the rote because it aims at the continuous structuring of information, has been put forward with the aim of raising individuals who develop themselves, have effective communication skills, keep up with the innovations brought by time and produce different ideas (Akman, Karaaslan, & Bayram, 2022; Akman et al., 2022b; Banihashem, Noroozi, & Khaneh, 2021; Bozkurt, Eryilmaz, & Boyraz, 2021; Gault & Cuevas, 2022; Jackowicz, 2021; Noroozi, Banihashem & Biemans, 2021; Öztürk & Demir, 2021; Yazıcı & Koca, 2008; Yigit, 2020; Yildirim, Tikman, & Senturk, 2022;). To this end, Social Studies teachers are trying to provide their students with educational environments that are intended to be created using new narratives, methods and techniques. This lesson should usually be processed with concrete and abstract cultural heritage elements in mind as it is based on the evaluation of past lives and the context of social and cultural heritage with the environment experienced. From this perspective, museums create educational places for students to make sense of history in the context of the circumstances of that day and to arm themselves with knowledge of the past. This study, in light of the information described above; the development of museum education activities for social studies courses and the evaluation of the impact on students' academic achievements constitute the problem situation. In light of this problem, answers to the following sub-problems have been sought;

1. Is there a significant difference between the achievement test post-test mean scores and the pre-test mean scores of the experimental group participants participating in the social studies museum training?
2. Is there a significant difference between the achievement test post-test mean scores and the pre-test mean scores of the control group participants who attend the social studies course through classical learning?

3. Is there a significant difference between the achievement test post-test point averages of the participants in the experimental group participating in the museum education activities and the achievement test post-test point averages of the participants in the control group who continue their education through classical learning?
4. Is there an effect of gender on the scores of the experimental group's post-test achievement measurements?

While evaluating the qualitative data set of the research, an answer was sought to the question "What are the students' views on museum education and its impact from out-of-school learning environments in social studies?"

Purpose and Importance

Museums in our country that have hosted a long-established history are a good learning environment for social studies class (Egüz and Kesten, 2012). In addition to the basic knowledge the student possesses, the art of past scientists and communities, the product of the summer, or the ability to observe all kinds of works in a way similar to the conditions of the day, is intended to make their own conclusions about how scientific knowledge was obtained. It will be intended to help students come up with hypotheses about innovative thinking, innovative idea-making, how to bring new ideas produced to life in the field of science and technology. In conjunction with the process and process analysis, it is desirable to create awareness about museums and recognize that museums have an important structure in the educational perspective and especially in terms of social studies lessons, and to ensure that students gain new skills about education.

Method

Research Pattern

This research has 2 separate data sets using two research methods, quantitative research and qualitative research. The quantitative size of the research was maintained by a preliminary test-final test applied experiment and a 2 * 2 semi-experimental pattern with a control group. The research is semi-experimental because the quasi-experimental pattern is not specified as the principle of selectivity or the draw and the control and experimental group of participants in determining the participants present in the experimental and control group in the study. Using the qualitative pattern, the qualitative research section benefited from the semi-structured interview form.

Working group

The experimental group consisting of 25 students, 14 girls and 11 boys, continuing their education and training at the 7th grade in a state secondary school; the control group consisting of 25 students, 13 girls and 12 boys, constitutes the study group of the research.

Experimental Process

The data collection process took place in three stages. In the first stage, a pre-test related to the relevant achievement was applied to the experimental and control groups. Then, subjects were taught with standard teaching methods and techniques in accordance with the curriculum in the classroom environment with the same characteristics in the experimental and control groups. A museum visit was also made with the experimental group. Before the visit, the experimental group was informed about the process and attention was drawn to the period in which the scholars who grew up in the Turkish-Islamic civilization were working.

In the second stage, the final test, which was prepared by taking expert opinions, was applied to the experimental and control groups in the classroom environment. At this stage, it was tried to measure whether there was a significant difference in the knowledge level between the experimental and control groups regarding the process.

Finally, in the third stage, semi-structured interviews were conducted with 4 female and 4 male participants, who were selected on a voluntary basis among the participants in the experimental group.

Analysis of Data

SPSS 22.00 program was used in the analysis of quantitative data. In addition, in the quantitative dimension of this study, 2X2 split-plot mixed design, which is one of the experimental designs, was used. In the aforementioned design, the first factor refers to the experimental and control groups, which are independent treatment groups, and the other factor refers to the pre-test and post-test measurements, which are repeated measurements of the dependent variable under different conditions.

Table 1. Normality test results

	Experiment		Control	
	The Foreword	Final test	The Foreword	Final test
N	25	25	25	25
X	38.88	90.08	38.72	68.32
S	5.35	7.31	5.12	6.92
Median	40.00	92.00	40.00	68.00
Minimum	28.00	80.00	28.00	56.00
Maximum	48.00	100.00	48.00	80.00
Shapiro-Wilk	.937	.886	.925	.941
P	.127	.009	.067	.158
Skew	-.345	.032	-.501	.234

Results

Findings Related to the Quantitative Data of the Study

Table 2. Experimental and control groups achievement test pretest and posttest mean and standard deviations

Groups	The Foreword			Final test		
	N	X	Ss	N	X	Ss
Experiment	25	38.88	5.35	25	90.08	7.31
Control	25	38.72	5.12	25	68.32	6.92

When Table 2 was examined, participants in the experimental group averaged 38.88 (Ss: 5.35) from the achievement test preliminary test measurement, while the scores they received from the final test measurement averaged 90.08 (Ss: 7.31). Participants in the control group had an average score of 38.72 (Ss: 5.12) from the success test preliminary test measurement, while their score from the final-test measurement averaged 68.32 (ss: 6.92).

Findings on Qualitative Data of the Study

Table 3. Whether the students contributed to what the museum learnt, and if so, the number of questions, answers and contacts of what happened.

Questions	Answers	Frequency (f)
A. Has the museum contributed anything to what you learned?	A.1. Made a contribution	8
	A.2. It didn't add up	0
	B.1. My general culture has evolved	3
	B.2. Helped me internalize the topics	3
B. What are they if they happened?	B.3. I found out who made the tools and inventions we use today.	3
	B.4. It prompted scientific studies and a willingness to invent	2

When Table 3 is examined, all of the students interviewed stated that the museum had contributed to the issues it had learned. Of the students, K3, K4 and K8 said the museum has improved its overall culture; K2, K6, and K7 contribute to internalizing subjects; K1, K6 and K7 contribute to the learning of the tools and inventions we use today; K3 and K5 indicated that it aroused a desire for scientific studies and invention.

Some of the students expressed their views as follows:

"I think that with the development of my general culture, it will contribute to me in future history lessons. At the same time, these works made me think that I could do scientific studies." (K3)

"It helped me internalize the subjects. I thought that some scientific works belonged to western scientists. It is a source of pride that such scientists have lived on our land." (K6)

Discussion and Conclusion

It was concluded that the achievement test post-test averages of the experimental group students in which museum education activities were carried out were higher than the pre-test averages. It has been concluded that museum education activities have a positive effect on students' academic success in the relevant acquisition in the social studies course. In the Energy Park study, which was conducted with 7th grade students in parallel with these findings, it was observed that there was a significant difference between the academic achievement pre-test results and post-test results of the experimental group students (Bozdogan, 2007:214). Again, in the study conducted by Çerkez (2011) it was concluded that the academic achievement post-test results of the experimental group students, who were working on the achievements of the Economy and Social Life unit based on museum activities, were significantly higher than the pre-test results. When the literature is examined, there are also different studies in which meaningful results were obtained in favor of the experimental group (Önder et al., 2009; Kaba, 2021).

“What would you say about the effects of the museum on the subjects you covered in the Social Studies course?” It was concluded that all of the students interviewed over the question had positive thoughts. This data is also in line with the quantitative results of our research. In addition, museum education practices; Expressing such expressions as facilitating the understanding of the subjects, creating a basis for permanent learning and acquiring in-depth knowledge overlaps with our research objectives.(Çetindağ-Kuşan, 2005; Çulha, 2006; Yeşilbursa, 2006; Demirboğa, 2010; Filiz, 2010; Yazıcıoğlu, 2010; Çerkez, 2011; Güler, 2011; Avcı-Akçalı, 2013; Yorulmaz, 2016; Üztemur, 2017).

It has been concluded that museum education contributes to the subjects learned. My general culture has improved, it has contributed to my internalization of the subjects, I learned who made the tools and inventions we use today, it aroused the desire to make scientific studies and inventions, etc. It is an indication that especially the scientific process skills of the students were positively affected. In the same way, the fact that the study motivated the students to make scientific inventions and studies made our research even more valuable.

As a result, it was concluded that museum education activities, which are one of the out-of-school learning environments, are effective in increasing the academic success of students, making learning by doing and experiencing valuable depending on the constructivist education approach, and also in developing positive thoughts about the social studies course.

Recommendations

- Social studies curriculum can be arranged by taking into account out-of-school learning environments and course hours can be increased.
- Virtual museum tours can be organized through various informatics tools in schools that do not have the necessary facilities.

- The procedures required for museum visits can be facilitated and museums can be used more actively for social studies lessons.
- Museum trips can be organized in order to be a source for scientific study platforms such as Teknofest and Tübitak 4006 and to reveal the feelings of scientific activity in students.

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An Analysis on the Visual-Verbal Dialectic in the Composite Art of William Blake: Take Songs of Innocence and Experience as an Example

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Abstract: William Blake is a famous English pre-Romantic poet who pays great attention to visual art, and his works are a trinity of poetry, painting and printing, which is quite unique in English poetry history. Recent studies tend to focus more and more on the relationship between picture and text, rather than solely studying the poetry. Likewise, This paper takes Blake's early poetry collection *songs of Innocence and Experience* as the research object, and discusses inherent logical and dynamic relationship between the paintings and the poems, generally in three aspects: the visualization of verbal images, the visualization and beautification of the texts and letters, and the complementary and interactive relationship between verbal poems and visual illustrations, endeavoring to find the visual-verbal dialectic that better demonstrates the composite art of black's illustrated poems and hopefully sheds some light on the future development of the form of art and literature as well as the composite art form.

Keywords: Composite Art, Visual-verbal Dialectics, William Blake

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Introduction

William Blake is a great poet and artist who are deeply influenced by the French Revolution and one of the leading characters of Pre-Romanticism. Blake's books unite the labors of the craftsman and the artist: he invents both the text and its illustrations (often at the same time), cuts both into the copper plate as parts of one total design, and prints them on his own press, retouching and adding final color by hand. In Blake's *Innocence and Experience* he showed how the 'Illuminated Printing' combines the painter and the Poet in a deeper sense than the obvious one; in other words that the original copies of *the Songs* are emblem books in which both words and engravings are a unity, contributing essentially to the experience of the readers, and to their understanding of the whole. Therefore, we should not simply discuss poetry and separate his poems and paintings, but combine them with research. This paper will take *songs of innocence and experience* as an example to study the interaction and effect of Blake's poems and paintings. As Mitchell states in his composite art of William Blake: "In general, however, neither the graphic nor the poetic aspect of Blake's composite art assumes consistent predominance:

their relationship is more like an energetic rivalry, a dialogue or dialectic between vigorously independent modes of expression.” (Mitchell,4) Therefore, This paper discusses how Blake achieves extraordinary artistic effect and becomes a unique creative artist and writer in history through the unique way of combining poetry and painting and attempts to find and analyse the dialectic that contributes to the “energetic rivalry” relationship of the poems and the paintings in Blake’s first illuminated poetry *Songs of Innocence and Experience* and appreciates the composite art of William Blake and hopefully shed some lights on the better expression of poems and literature through the innovation of the artistic forms and interdisciplinary channel integration, which are inspired by the brilliant artist and poet William Blake 200 years before.

The relationship between paintings and poems has always been a hot discussion in the field of literature criticism. About in 1 century A.D., Horace stated for the first time “ut pictura poesis” in his famous *Ars Poetica* that translated as “as is painting so is poetry”, i.e. “The critic must bear in mind that poetry is like a painting.” (447) Aristotle's *poetics* emphasizes that poetry is imitated by sound, and painting is created by color and posture.(19) Therefore, the notion that painting is consistent with the poetry is prevailing throughout the 17th and 18th century, especially under the influence of the Neo-Classicists (Zhang, 38).

In 1766, however, Lessing published his famous *Laocoon*, in which he believed that poetry (or literal art) and painting (or plastic art) belong to two different forms of expression. Painting uses "natural symbols" such as lines, shapes and colors to imitate the objective world, which is suitable for depicting static objects in space. Poetry uses language, an "artificial symbol", which is suitable for describing the actions and plots that take place in time. "The medium symbols that painting uses to imitate are really completely different from those used in poetry, that is, painting uses the form and color in space, while poetry uses the sound that occurs in time" (Lessing, 90). In Lessing's view, painting and poetry belong to the art of space and time, static and dynamic, visual and auditory. The separation of poetry and painting represents the turn of the Western tradition of "picturesque poetry".

Blake’s first illuminated work, *songs of Innocence and Experience*, however, 22 years later than the publication of *Laocoon*, seems to oppose Lessing’s point of view in every way and seemingly inherited the traditional concept of integrating poetry and painting. However, what should be noted is that Blake more importantly innovated the traditional idea and create a dynamic, organic and relationship between poetry and painting and viewed his creation as one process instead of the multiplication of poetry and illustration, therefore we call the creations of Blake as “composite art”, which is unique and full of originality throughout the history of art and literature.

Therefore, this paper chooses Blake’s first illuminated poetry *Songs of Innocence and Experience*, one of the earliest works of Blake, to discuss Blake’s unique artistic methods to create such a composite art and analyse the internal dialectical relationship between paintings and poems in the work that distinguish William Blake from any other artists or poets throughout history, generally in three aspects: the visualization of verbal images, the

visualization and beautification of texts and letters, and the complementary and interactive relationship between verbal poems and visual illustrations.

The Visualization of Poetical Images

Direct Visualization

Blake is entirely within the mainstream of eighteenth-century literary painting in the sense that all of his pictures are in some way related to texts. In Blake's opinion, nature is the source of creation, the starting point of imagination and the basis of harmonious human life. The whole nature should be the form of creation, and the key lies in whether the artist's imagination can grasp it. Because of this, the images of various animals and plants in nature provided him with endless imagination. In the *Songs of Innocence*, we see is playing "a little lamb," sing "birds", their lameless "grasshopper", in the *Song of Experience*, the "rose" is ill, we see "fly insect" is dying, "tiger" is that the glowing, the object with its inherent characteristics, such as sound, color, cleverly combined together, constituting a vivid picture scroll, showing a group of dizzying visual and auditory images, for the painting to create artistic conception.

The Echoing Green, for example, is particularly outstanding in this respect. The poem consists of the arrangement and combination of objects and images to form the landscape:

The sun does arise,
And make happy the skies.
The merry bells ring
To welcome the Spring.
The sky-lark and thrush,
The birds of the bush,
Sing louder around,
To the bells' cheerful sound.
While our sports shall be seen
On the Ecchoing Green.

The poem begins with a description of spring coming and everything is full of life. The song of larks and thrusses and the birds in the forest, accompanied by the joyful chimes of bells and the playfulness of children, became a sea of joy, symbolizing the innocence of childhood. Then the author turns and begins to describe the state of the characters

Old John, with white hair
Does laugh away care,
Sitting under the oak,
Among the old folk,
They laugh at our play,
And soon they all say.

‘Such, such were the joys,
When we all girls & boys,
In our youth-time were seen,
On the Ecchoing Green.

The second section describes a group of old people sitting under an oak tree happily watching children playing scene. The play here implies that after the happy and carefree childhood, people will move around and work hard in order to make a living and support their families. The poem ends with a return to the playful scene:

Till the little ones weary
No more can be merry
The sun does descend,
And our sports have an end:
Round the laps of their mothers,
Many sisters and brothers,
Like birds in their nest,
Are ready for rest;
And sport no more seen,
On the darkening Green



Figure 1. The Ecchoing Green

After the sun has set, the weary child returns to his mother and snuggles in her arms. The end of play symbolizes the end of life, that is, the return to the mother's arms and the beginning again.

Through the description of the picture, the poem not only combines objects and images, but also adds a symbol of human children, mothers, old people, a symbol of the animal kingdom larks, thrushes and birds and a symbol of the spring of nature, revealing the law of human life and showing the poet's love for life, nature and human beings. Just as Hegel said: "To express the meaning clearly apparent to consciousness in the image of a related external thing, does not need to let people guess, only through the analogy to make the meaning expressed more clearly, so that people immediately recognize its truth". Thus, the images in Blake's poems are tangible, and

there are combinations of images that the reader can immediately relate to. And through transforming the depiction of poetry into the static depiction at which painting excels, Blake fulfills the process of direct visualization of the poetical images, thus making his artist work are demonstrated to readers more vividly.

One Pictorial Image Representing Multiple Symbols

The image has multiple symbols. As a printmaker and poet, Blake observed the world with the eyes of a poet, but also with the techniques of a painter to spread color through his poems, in which symbols, allusions and three-dimensional sense could be noticed. Therefore, it seems inevitable that his poems use images with multiple symbolic meanings to construct peculiar pictures. This paper chooses "The Sick Rose" as a case study.

O Rose thou art sick.
The invisible worm,
That flies in the night
In the howling storm:

Has found out thy bed
Of crimson joy:
And his dark secret love
Does thy life destroy.



Figure 2. The Sick Rose (Wikimedia, 2022)

This is a poem in the *Songs of Experience*, which consists of two stanzas. On the surface, the imagery in the poem is simple and easy to understand, such as "sick rose", "invisible worm", "storm" and "crimson bed". However, when combined, the imagery is thought-provoking and gives room for endless imagination. In the case of "rose", the image is generally associated with a beautiful and pure love or thing, but Blake takes the opposite approach by using the word "illness" in front of it, which immediately gives the impression of being

battered and dying. Combined with the social status quo at that time, it is not difficult to find that the "sick rose" is probably to symbolize the society affected by evil forces or the working people destroyed. Then it can be inferred that "invisible insects" may be a symbol of the evil forces of those societies, they are like cancer, in the erosion of society, destroying the labouring people. In other words, the oppression and exploitation of the laboring people are the result of the intensification of contradictions in the capitalist society, which in turn leads to the corruption of social conduct and the degeneration of human beings. Therefore, "Sick Rose" symbolizes the loss of human nature and moral corruption, while "The invisible worm" symbolizes the exploitation and ugliness of capitalism.

In addition, as some critics have pointed out, the poem "is a depiction of the troubles of earthly love" (Foster, 16) that is to say, the black represents the storm night, sick of the roses was "invisible worm" trample upon, but instructions symbol of masculinity" invisible worm "night the storm broke into the symbol" scarlet bed "of the female, To destroy their life, become "sick rose", alluding to the relationship between the female lost virginity and selfish sex on the pure girl's destruction. So "sick rose" may also be a sign of feminine imagery, alluding to male sexual aggression. Thus, it can be seen that it is precisely black who cleverly set up multiple symbols of images to incisively and vividly show the beauty of different artistic conception of the poem. However, it is important to note that in many ways, words cannot fully explain the visual experience, and the image in the expression "artistic conception" "charm" has innate advantages than words, so the more unreal text description, sometimes need to create a more real visual effect, in the epic of the specific object not to extend the text "artistic conception". In general, the multiple symbolism of images is more conducive to the creation and imagination of illustrations, thus vividly demonstrating the organic relationship between paintings and poems of William Blake as a composite art.

The Visualization and Beautification of the Texts and Letters

There is no doubt that the visualization of language symbols is mainly reflected in the visual reproduction of poetry texts. In this collection, the text itself is part of the image, and the letters Blake uses often grow into vines that can only be interpreted in terms of the image. For example, the processing of the three pictures, namely the joint title page, the title page of the *Songs of Innocence* and the title page of the *Songs of Experience*, is particularly exquisite. The picture not only focuses on the introduction of the title, but also attaches great importance to the creation of the characters and their specific artistic conception. At the bottom of the joint title page are two fallen figures, with leaves around their waists, clearly ashamed and in a state of experience, representing Adam and Eve and hinting at humanity after its expulsion from the Garden of Eden. In the title page of *Innocence*, the first letter of the title opens like a growing plant, and there are dancing figures in the middle, indicating a happy atmosphere. In the picture, a mother reads a book to two children in front of her lap. Next to them is a broken apple tree, its trunk wrapped in vines, symbolizing the Christian tree that embraces sinful life. On the title page of the song of Experience, the first two innocent children, who have reached the age of experience, weep over the body of their mother, who can no longer protect them. Although such content is not described one by one in the text of the *Songs of Innocence* and *Experience*, Black recreates the art with

graphic letters, producing artistic effects that words cannot express, vividly and delicately drawing the dynamic process of human beings from innocence to experience. As Mitchel says, "Blake treated graphic art as text, summing up the entire history of writing from pictographs to pictographs to alphabetic with illustrated books."(118) Indeed, for Blake, his images are not merely representations of objects, but representations of whole ideas, and such texts bring poetry and images together more thoroughly, breaking down the boundary between words and images. But Blake does not illustrate just to visualize language, or his illustrated poems would not be profound. Obviously, Blake also emphasized the abstractness of the images in his prints, because this enhanced the symbolism of the images and prevented the reader from falling into the trap of interpreting the text with images. So, from another point of view, these image symbols have a certain symbolic meaning.



Figure 3. The combine title page, Innocence, Experience (Met Museum, 2022)

The Complementary and Interactive Relationship between Verbal Poems and Visual Illustrations

There are often such issues that appear in the works of Blake that the existence of illuminations which do not illuminate, which seems to be the most obvious manifestation of the independence of design from text and a paradox to the organic and dialectical relationship that this paper advocates, such as the the figure of a young man carrying a winged child on his head in the frontispiece to *Songs of Experience* [1], which is mentioned nowhere in the *Songs* and seems to be a single solitary painting. However, despite the absence of explicit textual associations that forced us not to regard it as a direct visual translation of words, it is inevitable, I argue, this sole study of the painting will eventually leads us into the world of verbal language, and through the process of analyzing the inter-relationship of the contents of poems and paintings, as well as the main idea of this poetry. In the frontispiece, The mysterious figure carrying the cherub has an obvious pictorial relative, which is the figure looking up at a child on a cloud in the frontispiece to *Songs of Innocence* [2]. And this latter composition does have an explicit verbal equivalent: it serves as an illustration to the song of the Piper "piping down the valleys wild" and seeing a child on a cloud, the introductory poem to *Songs of Innocence*. We cannot, however, make a direct verbal translation of the frontispiece to *Experience* from the Piper's song by way of the intermediate association of the picture of the Piper. "It is clear that the two frontispieces function not just as companion pieces with similar compositions but as "contraries" whose differences are as important as their

similarities. Any words we find to describe the frontispiece to *Experience* will have to involve transformations and reversals of the language discovered in the poem and illustration which introduce *Songs of Innocence*.” (Mitchell, 5).

It is widely acknowledged that since the frontispiece to *Innocence* clearly depicts the Piper, which is the character of the introduction poem, then the frontispiece to *Experience* must depict the analogous figure in the latter group of poems, the Bard whose voice is heard in the introduction poem to *Experience*. But it is important for us to note that this conclusion we made is not directly “given” by the text or its illustrations, but must be arrived at by a series of “associations, transformations, and creative inferences.” (Mitchell, 6) And what is closely next to the assumption of association is the process of interpretation by a comparison of the two frontispieces: in the *Innocence*, the child floats without the aid of wings on a cloud above the Piper; in the other the child has wings and yet must be carried by the Bard. The Piper looks up at the child, surrounded by an enclosed grove of trees; the Bard looks straight ahead, with a vista of open fields. The process of contrasts may not be so complex, but the process by which we arrive at that significance, however, is rather sophisticated contains a lot more more than simple matching or translating of visual signs into verbal. This inability to directly match the content and the illustration forced us to practice multiple creative inferences and make associations outside of Blake's own art. The image of the Bard carrying the child is rather similar to representations of St. Christopher carrying the Christ-child across the river, a theme which is very common in many English churches and in the works of many painters. The implication that the child on the Bard's head is Christ is certainly consistent with the symbolism of *Songs of Innocence and Experience*, and therefore induces a brand new set of verbal associations to be found in the legends of St. Christopher, the saint who, according to Jacobus de Voragine, is not only the "Christ-bearer," but "hast borne all the world" upon his shoulders. (645-648) This image also might indicate the popular image of the patron of travelers (in English folk, anyone who saw St. Christopher's image in a church will not die that day) (Whaite, 9), shedding the Bard on a kind of protective patron, as a guide or protector in the approaching journey through the dangerous world of *Experience*.

As a conclusion, this interpretation would reinforce the contrast with the carefree, wandering figure of the Piper in the *Innocence*, who is happily unaware of the road ahead and need not carry his Christ child muse as a burden. Furthermore, Blake's Bard carries his child on his head rather than in the traditional place, on the shoulders, perhaps a way of stressing the suggestion in *The Golden Legend* that the burden of Christ's weight is mental rather than physical. (Voragine, 645) Therefore, we could conclude from this case that there is a rather complementary and interactive relationship between verbal poems and visual illustrations in the works of William Blake, which allows the reader to make an overall appreciation on the composite art through the combination channels of vision and text, which is the byproduct of the dynamic dialectical relationship that hides within the core of Blake's creation concept, which enable his readers to enjoy a rather spectacular process of interpretation and appreciation.

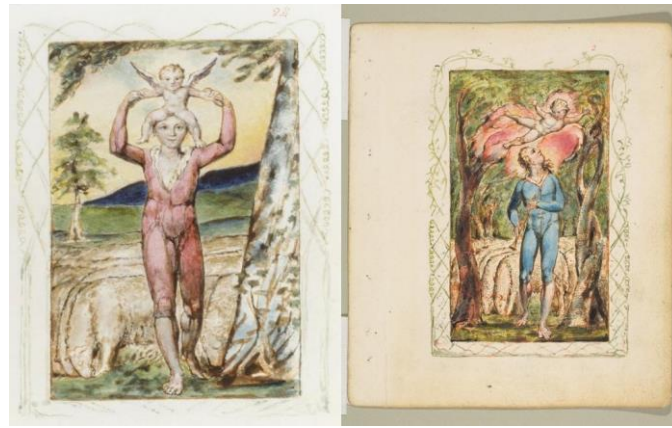


Figure 4. Frontispiece of Songs of Experience, Frontispiece of Songs of Innocence (Met Museum, 2022)

Conclusion

By examining the works of *Songs of Innocence and Experience*, I conclude that through dynamic interaction of paintings and poems Blake shows us his unique aesthetic orientation and his brilliant visual-verbal dialectic that contains in his illuminated poetry. Through the visualization of the poetical images, Blake not only leads us into single or multiple interpretations of the images, but also provides a more vivid channel to appreciate the core spirits of his poems that he wishes to convey; through the beautification of the words and texts, Blake shows us his great aesthetics as a painter and a great innovator as a combiner who creates such a composite artistic form: his lines of poems are rather in the structure of his illustration and altogether construct the whole picture; and finally, Blake also leads us into the more exciting appreciation when his paintings seems to have no the corresponding textual origins, therefore displaying a rather organic and innovative interaction between his paintings and poems. In this modern era of mechanical reproduction, the relationship between poetry and painting is increasingly divided. Literary and artistic creators may learn from the dialectical relationship between poetry and painting of Blake and create composite art through interdisciplinary and artistic channel integration, so as to achieve the innovative development of artistic creation. In a word, the song of innocence and experience embodies the dynamic relationship of dialectical unity of poetry and painting. It is not a simple combination or direct interpretation of each other, but an organic relationship between the combination and competition of the two to achieve unique artistic beauty, transcend the limitations of time and space, and release the beauty of poetry in a more vivid and innovative way.

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The Legitimacy of Voluntary Euthanasia: From Law to Culture

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Abstract: The legitimacy of voluntary euthanasia is controversial. When law scholars use international human rights laws to examine the legitimacy of voluntary euthanasia, ‘an individual’s self-determination’ and ‘the obligations of a State Party’ are two crucial perspectives they depend on. However, even from the two perspectives, Article 6(1) of the ICCPR does not explicitly endorse or oppose the legalization of voluntary euthanasia. But as State Parties to the ICCPR, the Netherlands and Australia legally allow the application of voluntary euthanasia under specific requirements. To clarify which social conditions conducive to the legalization of voluntary euthanasia in two countries, the article analyzes and concludes the commonalities and differences between the legislative process and current policies on voluntary euthanasia in the Netherlands and Australia. Then, the article analyzes these commonalities and differences through Hofstede’s cultural dimensions theory. Finally, the results suggest that particular cultural attributes could contribute to legalizing voluntary euthanasia in some countries.

Keywords: Legitimacy, Voluntary Euthanasia, the ICCPR, Culture

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Introduction

The subject of euthanasia is contentious, as are the reasons for its justification. Generally, many debates on voluntary euthanasia tend to establish their arguments on certain international human rights law instruments. In this regard, however, the International Covenant on Civil and Political Rights (hereinafter ‘ICCPR’) serves as a defense of the euthanasia debaters on both sides. Thus, the article will argue cultures play an essential role in the legitimacy of a legal issue by examining the common social conditions shared by the ICCPR States Parties that have legalized voluntary euthanasia.

The article comprises three sections. Section One investigates the legitimacy of voluntary euthanasia from the perspective of individual self-determination and a State Party’s obligations to protect personal life. Section Two explores how the Netherlands and Australia weigh an individual’s right to self-determination and their obligations to protect people’s lives under Article 6(1) in euthanasia policies. Section Three concludes the article with an analysis of the social conditions that were favorable to the introduction of euthanasia laws in

Australia and the Netherlands.

Does Voluntary Euthanasia Violate Article 6(1) of the ICCPR?

‘Voluntary euthanasia refers to the termination of life at the request of the person killed’ (Zdenkowski, 1997, p. 173). Many international human rights law documents are vague about the legitimacy of euthanasia. Hence, this section will focus on investigating whether voluntary euthanasia violates Article 6(1) of the ICCPR.

Article 6(1) stresses the inviolability of the right to life by providing that ‘[n]o one shall be arbitrarily deprived of his life.’ In fact, the term ‘arbitrarily’ functions to restrict a State Party’s obligations and a person’s right to self-determination. To determine whether Article 6(1) can be used to allow voluntary euthanasia, two specific questions have to be addressed: Does Article 6(1) require a State Party to protect a person’s right to life by prohibiting voluntary euthanasia? Is an individual’s right to self-determination justify his/her waiver of the right to life through voluntary euthanasia made arbitrary under this Article?

Thus, prior to scrutinizing the legality of voluntary euthanasia, it is necessary to examine all components of Article 6(1) to clarify the limits of a State Party’s obligations as well as a person’s right to self-determination.

Individual Self-determination under Article 6(1)

This section examines the textual interpretation of General Comment No. 36 to determine whether it directly or indirectly implies the individual’s right to self-determination under Article 6(1). Specifically, the interpretation of ‘self-determination’ and human ‘dignity’ will help to delineate the scope of individual self-determination according to General Comment No. 36.

Textual Interpretation

Textual interpretation, which is conducted here to study Article 6(1), is a method applied to analyze the original text of a legal document. Regarding individual self-determination, the ordinary meaning of the first sentence under Article 6(1) is silent on the legislation of euthanasia. It cannot be inferred from the ambiguous wording that the right to life is inalienable. Legally permitting people to make their own decisions about dying by euthanasia is at odds with the meaning of this sentence.

With respect to the third sentence, it is clear that ‘arbitrarily’ and ‘deprived’ are the only two key words to delimit the scope of the right to life, while homicide is the mere ascertainable deprivation of life (Zdenkowski, 1997, p. 185). According to Zdenkowski (1997), the ambiguous notions of ‘arbitrarily’ and ‘arbitrary deprivation of life’ lead to many uncertain interpretations and contradictory scholarly views (p. 186). Therefore, this sentence cannot answer whether people’s exercising of their the right to self-determination by requesting voluntary euthanasia is an arbitrary deprivation of life.

General Comment No. 36

The Human Rights Committee's Draft General Comment No. 36 on Article 6 ('General Comment No. 36') provides interpretations of 'self-determination' and 'human dignity', which help to clarify the issue of individual self-determination.

(a) Interpretation of 'Self-determination'

Paragraph 10 of General Comment No. 36 mentions the sphere of an individual's self-determination, although it is not sufficiently clear to resolve all the issues associated with euthanasia. General Comment No. 36 does not specify the groups who are granted the self-determination right to request euthanasia. First, under Joseph's (2019, p. 354) argument, General Comment No. 36 does not explicitly regard the terminally people as the sole group that can access 'compliance of assisted voluntary dying regimes' to facilitate their premature deaths. Likewise, the Human Rights Committee does not prevent the application of such voluntary dying regimes to children according to their express and informed consent (Joseph, 2019). Third, neither Article 6(1) nor the General Comment No. 36 discuss whether legally incompetent people, such as minors or those in a permanent vegetative state, have the right to autonomy enjoyed by those who are regarded as being legally competent (Amarasekara & Bagaric, 2002, p. 37).

Second, the issue involves the interpretation of 'autonomy'. Paragraph 10 of the General Comment No. 36 does not directly state whether 'autonomy' should be interpreted as the way in which individuals should behave by following 'their desires' or what is 'good for them' (Right to Life UK, 2017).

Third, the term 'autonomy' used in paragraph 10 of the General Comment No. 36 to justify euthanasia or assisted suicide is, in essence, inconsistent with the primary intentions of the ICCPR drafters. Furthermore, it cannot be inferred that euthanasia and assisted suicide are the inherent derivatives of the right to life (Right to Life UK, 2017).

(b) Human Dignity

Dying with dignity appears to be a popular reason given by people seeking to access euthanasia. It is worth noting that human dignity is not the right to self-determination itself, but simply a catalyst for people to exercise their self-determination when choosing their mode of dying. However, even though human dignity may serve as the reason for people wishing to die by euthanasia, it is necessary to analyze the arguments about voluntary euthanasia through the lens of human dignity.

The wording of the ICCPR offers no guidance on whether 'dignity' should be construed as 'an experiential value' espoused by the proponents of euthanasia or assisted suicide, or as 'the inherent value' contended by those opposed to legalizing euthanasia (Right to Life UK, 2017). However, General Comment No. 36 provides several explanations for the term 'dignity'. These are given below.

First, the term of ‘life with dignity’ is only implicit under General Comment No. 36, which fails to clarify whether this term ‘entails more than just living a life, but rather living a life above a certain standard’ (Joseph, 2019). However, based on paragraph 10 of this document, Joseph (2019) proposed that euthanasia could be used as ‘the medical means’ to ‘facilitate the termination of life of afflicted adults’ in order to mitigate their ‘physical or mental pain’ and respect their ‘wish to die with dignity’. Even so, this paragraph still be rejected because ‘similar medicalization in which actively killing people is described as a medical treatment or as occurring through medical means’ (Choice is an Illusion, 2022).

Furthermore, General Comment No. 36 in Article 6 incorporates ‘dignity’ into the interpretation of the right to life, although it is insufficient to resolve the practical issues associated with euthanasia. According to Caban (2018), paragraph 3 seems to extend the interpretation of the right to life to which individuals are entitled with ‘the enjoyment of life “with dignity”’ (p. 189). Caban (2018, p. 189) further highlighted that paragraph 3 shifts the focus from ‘life’ to ‘life with dignity’, although whether this extension will ‘modify the interpretation of Article 6 of the ICCPR’ and be applicable to the practice of euthanasia remains to be seen. Unfortunately, it cannot be denied that General Comment No. 36 is still unable to address the complicated issues related to euthanasia in practice (Caban, 2018, pp. 196-198).

The Obligations of a State Party under Article 6(1) to Safeguard the Right to Life

This section examines a state’s obligations in regard to the issue of euthanasia. Article 6(1) will be analyzed to determine whether it specifies the obligations of a State Party by adopting a textual interpretation of the term ‘arbitrary’, further helping to clarify the procedural and substantive safeguards.

Textual Interpretation

As mentioned earlier, textual interpretation is helpful to uncover how the original expressions of Article 6(1) clarifies a State Party’s obligations to protect people’s right to life. The first sentence of Article 6(1) does not directly refer to a State Party’s obligation to safeguard the right to life.

The second sentence provides that the right to life ‘shall be protected by law’, but this sentence does not clearly note the certain legislative hierarchy of the ‘law’ (Zdenkowski, 1997, p. 185). As Dinstein (1981) suggested, a State Party under the ICCPR obligations should guarantee the right to life with the laws of ‘higher forms in the legislative hierarchy, by statute or constitutional provision’ (p. 115). Hence, the second sentence remains silent on how a State Party can protect a person’s right to life in the legislation of euthanasia. Furthermore, this sentence fails to imply the potential extension of legal protection for life. According to the HRC, ‘the ambit of the protection to other threats to life’ should be extended to include ‘all possible measures to eliminate malnutrition and epidemics’ (Legislative Assembly of Northern Territory, 1996). Nevertheless, it is unclear whether the legal protection mentioned in this sentence includes the safeguards against voluntary euthanasia or any form of voluntary suicide. Third, the sentence does not state the extent to which States are under obligations to protect the right to life, thereby giving States the freedom to decide how to fulfill such obligations

(Zdenkowski, 1997, p. 184). Therefore, Zdenkowski (1997) believed the HRC would find it difficult to detect whether a State Party has instituted enough legal procedures for protecting people's lives, or whether the established safeguards have sufficient deterrent power to counter any potential infringement on an individual's right to life. The sphere of the right to life determines how much legal protection a State Party is required to provide to safeguard an individual's life (Zdenkowski, 1997). Although there is no unequivocal answer to this issue, the next section will discuss the greatest extent to which a State Party can ensure legal safeguards to protect people's lives.

The third sentence of Article 6(1) does not directly specify 'the conduct to be criminalized' or 'the element or penalties commensurate with such crimes' (U.S. Department of State, 2017). Similarly, the original text of this sentence does not expressly consider certain conducts as being arbitrary deprivations of life, even if such conducts are illegal (U.S. Department of State, 2017). Hence, whether the practice of euthanasia is a violation of law or an arbitrary deprivation of life is a borderline problem, which demands close scrutiny, careful discussion and rigorous monitoring.

Interpretation of 'Arbitrary'

The HRC's non-arbitrariness requirements under the ICCPR can be inferred from the interpretation of 'arbitrary', which can help to explain the obligation of a State Party under Article 6(1). According to Joseph (2010, p. 102), 'loss of life' would be non-arbitrary under Article 6(1) in 'reasonable and proportional' situations. Further, Joseph (2010) proposed an overriding requirement regarding 'arbitrariness', which stresses the necessity of 'corresponding to the prohibition on arbitrary restrictions' in this Article as well as being proportionate to 'the purpose of promoting one of a list of legitimate ends' (p. 103). But it is noteworthy that, since the 'legitimate ends' are unable to justify the termination of a life in any case, 'the limits to the right to life (Article 6) are likely to be far narrower than those permitted under Clawback clauses' (Joseph, 2010, p. 104). Hence, it is difficult to deduce the obligations of a State Party merely from the academic interpretation of 'arbitrary'. Instead, it would help to learn State Parties' duties in regard to euthanasia by canvassing how the HRC's General Comments require State Parties to institute procedural and substantive safeguards to prevent the arbitrary use of euthanasia.

Procedural Safeguards

Under the HRC's General Comments, a State Party is prohibited from arbitrarily depriving a person of life and is obliged to develop appropriate and effective procedural safeguards to 'mitigate arbitrariness' (Arbolino, 2016, p. 281). Accordingly, the legislation of euthanasia seems contrary to a State Party's obligation to safeguard 'the dying against arbitrary deprivation of life' (van den Akker et al., 1997, p. 293). However, the non-arbitrary limits under Article 6 are not absolute. Taking this argument further, the term 'arbitrarily' could be equated with the meaning of 'contrary to due process of law' (Bossuyt, 1987, pp. 121-125). To prevent the misuses or abuses of euthanasia, Arbolino (2016) maintained '[t]he textual crux of applying Article 6 to the withdrawal of life

support is the provision proscribing the arbitrary deprivation of life' (p. 263). Stated differently, the procedural safeguards are essential to make the withdrawal of life support legally permissible under Article 6 of the ICCPR.

Substantive Safeguards

To decrease the chance of arbitrariness occurring, the stipulation of the true and voluntary consent of a patient is a substantive safeguard. According to Dinstein (1981), voluntary euthanasia would be permitted by Art 6(1) only under specially narrow circumstances, where a patient must make an authentic demand for euthanasia to ensure the validity and effectiveness of his or her waiver to the right to life (p. 121). Besides, 'rigorous statutory safeguards [should be] in place to ensure the authenticity and reliability of that consent, including a "cooling off" period' (Zdenkowski, 1997, p. 192). Furthermore, this procedural requirement is underpinned by the due process of law, mirrored by rigorous legal safeguards to validate the waiver of the right to life made by the individual requesting voluntary euthanasia, which can be factored into 'authenticity, reliability and safeguards' (Zdenkowski, 1997, p. 191).

To sum up, the ICCPR does not require State Parties to prohibit voluntary euthanasia altogether. Rather, voluntary euthanasia can be conditionally liberalized based on the establishment of strict procedural and substantive protections.

Evolving Weight of Individual Self-determination and State Obligations in Dutch and Australian Euthanasia Policies

From the previous section, it is difficult to infer from the ICCPR that the right to self-determination can justify individual access to voluntary euthanasia. Nonetheless, by analyzing the States' obligations under the Convention, voluntary euthanasia can be legalized if the States Parties establish rigorous legal safeguards to prevent the arbitrary use of euthanasia. Hence, this section analyzes the possible conditions under which ICCPR States Parties may liberalize voluntary euthanasia to the extent permitted by the Convention. As a backdrop, the section summarizes the history of the legalization of euthanasia in the Netherlands and Australia.

The Netherlands

Over the past three decades, the Dutch euthanasia laws have undergone a series of changes that have tended to ease restrictions on euthanasia applicants in deference to the individual's right to self-determination. This part investigates the evolution of euthanasia laws in the Netherlands.

Weakening the Traditional Defensive Doctrine

Due to its judicial tradition, instead of approaching euthanasia issues from an individual self-determination perspective, the Dutch focused on whether providing or performing euthanasia is the equivalent of criminal

homicide (de Vries, 2004, p. 367). Thus, before examining the Dutch euthanasia practices, it is necessary to introduce the necessity defense doctrine, which the involved physicians applied to argue their innocence.

Before enacting Dutch euthanasia laws, the Netherlands fulfilled the ICCPR obligations to protect people's right to life by assessing the specific situations when 'euthanasia may be justified by the doctrine of necessity' (Tak, 1997, pp. 24-29). This 'necessity' doctrine is also iterated by the Supreme Court's instituted preconditions, 'under which a defense of necessity will protect a doctor from prosecution or assisted suicide' (Chesterman, 1998, p. 363). This doctrine was designed to defend a doctor facing two competing values: respecting the law or mitigating the patient's pain (Keown, 1995, p. 410). In subsequent years, the 'defense of necessity' doctrine gradually evolved into a series of procedural and substantive safeguards which place strict requirements on patients requesting euthanasia and physicians performing euthanasia (Chesterman, 1998, p. 376).

Hence, as reflected in the case of *Chabot*, the Dutch judiciary permitted the limited application of euthanasia for terminating the unbearable suffering of terminally ill patients by granting physicians immunity under 'necessity defense' (Schoonheim Case, 1985; Schoonheim Case, 1987; Chabot case, 1994). Briefly, euthanasia is legally permitted only when applied for medical purposes. The legality of euthanasia in the clinical domain is emphasized by *Brongersma* as well, which explores whether physicians are allowed to perform euthanasia for people experiencing 'existential suffering' (Brongersma Case, 2003). However, the Dutch Supreme Court finally imposed penalties on Dr Sutorius by asserting that a necessity defense is inapplicable to non-medical situations where people's suffering is not a result of medical issues (Brongersma Case, 2003).

As noted already, the Netherlands kept the door ajar for lawful euthanasia by strictly restricting the situations where a necessity defense doctrine can release the involved physicians from criminal liability. However, in 2005, this conventional defensive doctrine was challenged by the proposal of the Dijkhuis Commission, suggesting that the control over lawful euthanasia be relaxed by extending the definition of 'medical domain' (KNMG, 2022). And in 2011, the Royal Dutch Medical Association, the parent of the former, further advocated that those suffering from non-clinically-induced agony be eligible to access euthanasia (KNMG, 2011). From this perspective, the necessity defense principle was becoming less unshakable in preventing the use of euthanasia.

Moreover, the Dutch euthanasia legislation, enacted in 2001, does not establish sufficiently stringent legal safeguards against the misuses or abuses of euthanasia. To be specific, this legislation seems incapable of preventing a deliberate termination of individual life, an undue application of euthanasia or assisted suicide, as well as the misuse of euthanasia without considering the 'irreversibility of euthanasia' and the immaturity of minors, as it grants minors aged 16 to 18 the right to decide by themselves to end their lives with euthanasia (Joseph & Castan, 2013, p. 212). In this regard, the Dutch euthanasia legislation seemingly drove the tendency to break the tradition established by the necessity defense doctrine.

Considering the Quality of life of the Mentally Ill and the Elderly

Remarkably, different from its judicial tradition, the right to self-determination seems to be expressly embedded in current Dutch euthanasia policies. In 2019, Dutch lawmakers relaxed the restrictions on incompetent patients, who are not legally required to express a death wish to end their lives with euthanasia. The case where a patient with severe dementia was euthanized became a catalyst for the Netherlands to relax the control over the patient's decision-making capacity to access euthanasia. In this case, an unnamed doctor performed euthanasia on an elderly Alzheimer's woman who had requested euthanasia before she became legally incompetent. Prosecutors deduced that dying by euthanasia is against the patient's will because she had to be 'restrained by her family as she was euthanized, having been given a sedative in her coffee beforehand' (The Guardian, 2022). However, both the criminal court and supreme court acquitted the doctor, as the situation of the Alzheimer's patient satisfied the requirements mentioned earlier for an eligible euthanasia applicant. More importantly, the Supreme Court argued that a legally incompetent patient could not make an express request for euthanasia. Also, the Dutch Supreme Court relaxed the substantive provision requiring terminally ill patients to be conscious when requesting euthanasia so as to maximize the respect for everyone's right to self-determination. That is because it is difficult to judge whether unconscious patients' behaviors represent their real wishes due to the limitation of current medical technology.

In 2020, the 'completed life' provision for euthanasia was extended to healthy senior citizens aged over 75, which meant that euthanasia could be applied outside the medical domain (The Guardian, 2022). This reflected the Netherlands' efforts to expand the scope of euthanasia policy by granting more freedom to the elderly who feel they have 'completed life'. That is because Dutch lawmakers believe other factors besides terminal illness may cause people to have insufferable experience, especially the elderly. In other words, the 'completed life' euthanasia policy is intended to help those undergoing hopeless and unbearable experiences to terminate their lives practically and less painfully.

To conclude, after these changes, the eligible euthanasia applicant equation constitutes only three requirements: 'unbearable suffering', 'no prospect of improvement', and 'explicit request for euthanasia'. The third requirement for informed consent can be unnecessary when the applicant becomes legally incompetent prior to being euthanized. Additionally, it is apposite to note that the enlightened euthanasia law in the Netherlands stems from the tolerance of religious groups, less involvement of Dutch political parties to some extent (van den Akker et al., 1997, p. 290), and the legal developments in this country (Griffiths, 1998, p. 302).

Australia

Australia has in common with the Netherlands that its legislature also deals with the issue of euthanasia from a criminal perspective. However, the euthanasia legislation appears to have developed more slowly and in a more conservative direction. This section examines the legal changes to the law for voluntary euthanasia in Australia (Note: Australian states passing the legislation of euthanasia tend to replace 'euthanasia' with 'assisted dying',

as the later vocabulary is more accurate. However, to be consistent with the above paragraphs, the article still chooses to use ‘euthanasia’ when introducing the Australian situation).

Traditional Culture: One Barrier to Euthanasia Legislation in Australia

Due to the tradition of having self-governance and being trailblazers, the Northern Territory residents tend to exercise their self-determination in various ways. *The Rights of the Terminally Ill Act 1995* (hereinafter “ROTTIA”), the first state legislation on euthanasia in Australia, resulted from this tradition. However, the federal parliament repelled this pioneering legislation ahead of the Australian federal government one year later (Scherer & Simon, 1999, p. 75). Notably, Australian medical professionals played an essential role in bringing a premature end to this young legislation, concerned that voluntary euthanasia would deteriorate into intentional killings and redefine physicians as murderers (Australian Human Rights Commission, 2016).

In regard to Aborigines, the ROTTIA was an ill-considered outcome, as it conflicts with their ancient cultural tradition. It is of note that Aborigines from the Northern Territory have been adhering to ‘traditional belief systems’ for generations. They have difficulties changing their perception that medical treatment can help to facilitate death rather than sustain life (Zdenkowski, 1997, p. 4). Apart from retaining the old tradition, it is unlikely that Aborigines would ever authorize doctors to decide their death. This distrust stemmed from years ago when many Aboriginal women believed they had a tubal ligation without giving sufficiently informed consent (Zdenkowski, 1997, p. 5).

Physicians’ Cautious and Conservative Attitude: Another Barrier to Euthanasia Legislation in Australia

After the abrogation of the ROTTIA, the challenged role of physicians (Plumb, 2014, p. 83), the worries about the ‘slippery slope’ effect, and the indigenous culture (Australian Human Rights Commission, 2016) shaped the voluntary euthanasia practices in Australia. Firstly, the Aboriginal tradition plays a part in Australia’s euthanasia practices. Both the *Re Herrington* and *Rossiter* cases revolved around whether the physicians should be criminally liable for refusing further medical treatment for their patients (*Re Herrington*, 2007; *Brightwater Care Group Inc v. Rossiter*, 2009). Since euthanasia was unlawful at that time, both courts handled this issue by referring to the existing procedural laws and the disciplines of medical professionals. Although the two courts finally decided to remove the criminal liability of the involved physicians, the court of *Re Herrington* did not consider the patient’s indigenous culture, which affirms that ‘regardless of illness, people should be cared for and never be left to die’ (Faunce, 2007, p. 202). Additionally, the failure to consider the patient’s cultural beliefs not only conflicts with the s 19(2) of the *Charter of Human Rights and Responsibilities Act 2006* (Vic) which emphasizes the importance of respecting the cultural rights of Aborigines, but also disrespects the wishes of the patient’s partner and family (Faunce, 2007, p. 205). In this respect, Aboriginal tradition should not be disregarded by the courts when handling voluntary euthanasia issues in Australia.

Second, the *Nielsen* case reflects euthanasia opponents' concerns about the 'slippery slope' effect. In *Nielsen's* situation, instead of being a professional physician, the defendant was only an acquaintance of the deceased who asked the defendant to perform euthanasia for him (The Queen v. Merin Nielsen, 2012). Two pieces of evidence made it appear that the victim died by intentional killing rather than voluntary euthanasia. Firstly, the defendant was the only beneficiary in the victim's revised will. Secondly, there was no medical diagnosis to prove that the decedent suffered from a deterioration of physical health, causing him to seek euthanasia (The Queen v. Merin Nielsen, 2012). This case was contentious because there was no substantial evidence to prove whether the defendant was well-meaning. The *Nielsen* case reflects a worry that voluntary euthanasia may lead some people to die involuntarily.

Third, the physician's role is redefined by the gradually open euthanasia policies in Australia. Traditionally, the physician has been regarded as a healer; however, euthanasia can brand the physician as a 'killer' (Australian Human Rights Commission, 2016). Due to the stigma of this new role and potential criminal liability, the Australian Medical Association and its branches became the most vocal opponents of the legalization of euthanasia (Plumb, 2014, p. 83). In 2014, however, the Medical Services (Dying with Dignity) Exposure Draft Bill, carrying the legacy of the ROTTIA, proposed to redefine the doctor-patient relationship as a provider-consumer relationship, under which a physician who performs euthanasia for his patient can be considered as a 'provider' offering a service explicitly expected by his consumer (Australian Human Rights Commission, 2016). This new definition helped to remove the barriers to legalizing voluntary euthanasia in Australia. Moreover, the Draft Bill also permits mentally ill patients to end their intolerable suffering with euthanasia in the terminal stage of the illness (Parliament of Australia, 2014). This document included an immunity mechanism to remove the potential legal liability for physicians who perform euthanasia in a given situation to achieve this target (Parliament of Australia, 2014). To some extent, this immunity mechanism helped to win the support of Australian medical professionals, the main force behind the anti-euthanasia camp.

To date, five states have passed legislation on voluntary euthanasia. According to Australia's eligible euthanasia applicant equation, applicants are required to satisfy five restrictive requirements in Western Australia, South Australia, Tasmania, and Queensland (Voluntary Assisted Dying Act (Vic), 2017; Voluntary Assisted Dying Act (WA), 2019; Voluntary Assisted Dying Act (Qld), 2021; Voluntary Assisted Dying Act (SA), 2021; End-of-Life Choices Act 2021 (Tas), 2021). Under these requirements, mentally ill or physically disabled people cannot access euthanasia. However, Victoria provides some leeway for mentally and physically incompetent people by providing that 'Mental illness or disability alone are not grounds for access to voluntary assisted dying, but people who meet all other criteria, and who have a disability or mental illness, will not be denied access to voluntary assisted dying' (Victorian State Government, 2019). But in general, Australia's euthanasia policies are more restrictive than those of the Netherlands.

Implications of Hofstede's Cultural Dimensions Theory on the Legitimacy of Voluntary Euthanasia

In the previous section, the similarities and differences between the legislative process of voluntary euthanasia in the Netherlands and Australia were examined. Using Hofstede's cultural dimensions theory, this section will explore the specific cultural attributes that play essential roles in legalizing voluntary euthanasia as well as in different levels of relaxation of euthanasia policies in the two ICCPR States Parties.

An Introduction to Hofstede's Cultural Dimensions Theory

Hofstede's cultural dimensions theory is commonly applied in the study of cultural psychology. However, as concluded by van Toor (2017, pp. 1-15), legal scholars have gradually applied the approach to comparative law studies to explain the differences in legal systems between countries resulting from their cultural-psychological characteristics. Hofstede's cultural dimensions theory covers six dimensions, which are discussed briefly below. The first dimension is *power distance*, which is the extent to which people accept the unequal distribution of power in society (Hofstede et al., 2010, pp. 60-62). In a society with high power distance, subordinates need to obey their superiors, but superiors and subordinates are on equal footing in communities with low power distance (Hofstede et al., 2010, pp. 62-66).

The second dimension is *uncertainty avoidance*, which refers to the level of threat that people feel about uncertain or unknown situations (Hofstede et al., 2010, pp. 189-190). In countries with a high degree of acceptance of uncertainty, their rules and even laws are subject to constant change, and they are more flexible in their interpretation and implementation of the rules, and vice versa (Hofstede et al., 2010, pp. 190-195).

The third dimension is *individualism versus collectivism*, which is used to measure whether a society is concerned with the interests of individuals or with the interests of the collective (Hofstede et al., 2010, pp. 90-92). Individualistic societies stress individual values and rights, while collectivistic cultures emphasize collective values and the subordination of the individual to the collective (Hofstede et al., 2010, pp. 92-99).

The fourth dimension is *masculinity versus femininity*, which evaluates whether a society represents more male qualities such as competitiveness and assertiveness or more female qualities such as modesty and caring for the vulnerable (Hofstede et al., 2010, pp. 138-146).

The fifth dimension is *long-term orientation versus short-term orientation*, which represents how a given society prioritizes its past and future when handling the current challenges (Hofstede et al., 2010, p. 239). Short-term oriented societies cling to tradition and resist change, while long-term oriented societies tend to prepare for the future and are open to change (Hofstede et al., 2010, pp. 236-240).

The sixth dimension is *indulgence versus restraint*. The higher the score of Indulgence, the more difficult it is for people to exercise self-restraint, and vice versa (Hofstede et al., 2010, pp. 280-287).

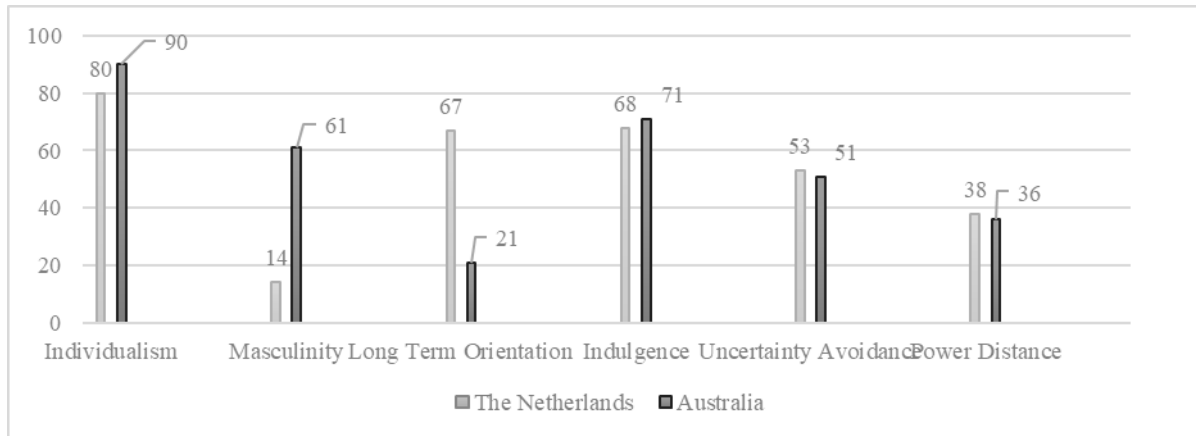


Figure 1. Comparison of the Dutch Culture with Australian Culture on Six Dimensions

Figure 1 above presents a data-comparison view taken from the official website of Hofstede Insights (Note: <https://www.hofstede-insights.com/country-comparison/australia,the-netherlands/>, comparison made on 19 May 2022).

According to Figure 1, the Netherlands and Australia have similar scores for Power Distance, Individualism, Uncertainty Avoidance and Indulgence. The differences in scores indicate that Australia is a masculine and short-term-oriented country, whereas the Netherlands is a feminine and long-term oriented country. Due to space limitations, only *individualism versus collectivism*, *masculinity versus femininity* and *long-term orientation versus short-term orientation* will be considered when comparing the two countries in terms of their legislative processes and substantive legislation on euthanasia.

The Application of Hofstede’s Cultural Dimensions

The Netherlands and Australia are two ICCPR States Parties that have legalized voluntary euthanasia. In this regard, the two characteristics that these two countries have in common are: they respect the right to self-determination of euthanasia applicants, and they had to fight against traditional laws or cultures in the legalization of voluntary euthanasia. As for their differences, the Netherlands shows more daring than Australia in breaking with tradition. Furthermore, the Netherlands is more likely to relax restrictions on euthanasia on the grounds of people’s quality of life. Third, Australian doctors are more conservative and careful about legalizing or performing euthanasia, so they appear to be less cooperative than their Dutch counterparts. In this section, the article will use Hofstede’s cultural dimensions theory to analyze the cultural attributes of the Netherlands and Australia and thus attempt to summarize several conditions an ICCPR State Party has to satisfy in order to legalize voluntary euthanasia.

Individualism: A Favorable Condition for Legalizing Voluntary Euthanasia in the Netherlands and Australia

Firstly, individualism could be conducive to the legalization of voluntary euthanasia in the Netherlands and Australia. As mentioned, central to the legalization of euthanasia is whether countries give more weight to the right to self-determination than to the state's obligations when interpreting Article 6(1). As the ICCPR States Parties have legalized voluntary euthanasia, the Netherlands and Australia are willing to hand the right to end life with euthanasia to the individuals themselves. The high scores on individualism suggest the Netherlands and Australia are two individualistic cultures where people value personal rights, needs, and contributions. Next, this section discusses how individualistic culture contributes to euthanasia legalization in the two countries.

For one thing, in individualistic cultures, people express their attitudes through their preferred mode of dying, and their self-determination to decide how to die becomes a private interest (Kemmelmeier et al., 1999, p. 2614). Thus, under the influence of individualism, people prioritize individual self-determination in regard to terminating lives with euthanasia (Karumathil & Tripathi, 2020, p. 22). Furthermore, individualism cultivates a positive attitude towards death. Living in an individualistic culture that does not shy away from the end, people may give more consideration to the issue of death, which has placed discussions of euthanasia in the public domain, and in the legislative agenda (Karumathil & Tripathi, 2020, p. 14). So, a culture of individualism has been a favorable, though perhaps not decisive, factor for the legalization of voluntary euthanasia in the Netherlands and Australia.

Interestingly, the two ICCPR States Parties established different standards for voluntary euthanasia eligibility after the passing of euthanasia laws. Below, these differences are discussed in terms of two cultural-psychological dimensions.

Feminine Culture: An Intrinsic Factor to Relax Restrictions on Euthanasia Applicants

Secondly, the Netherlands' more lenient requirements for euthanasia applicants could result from its feminine culture. According to their scores on this dimension, Australia has a 'masculine' society, and the Netherlands has a 'feminine' society. In a feminine culture, people value their quality of life more than their counterparts in a masculine culture (van Toor, 2017, pp. 1-15). As previously discussed, much of the debate about legalizing euthanasia involves individuals' quality of life. Many people seek access to voluntary euthanasia to end their lives when their unbearable mental or physical discomfort diminishes their quality of life.

Driven by an individual's preference for quality of life, the leniency of Dutch euthanasia laws is reflected in its extension of eligibility for euthanasia to the elderly and the mentally ill. However, not all states and territories in Australia legally allow mentally ill people to request euthanasia, let alone older people over 75 who are physically healthy and claim to have had a 'completed life'. In this regard, the difference in requirements for euthanasia applicants between the Netherlands and Australia could be explained by the fact that the Dutch place more value on the quality of life than do their Australian counterparts.

Long-Term Orientation

Thirdly, the reason the Netherlands broke with tradition, took the lead in euthanasia legislation, and gradually relaxed the fields of application and applicants for euthanasia, was possibly driven by its long-term orientation. According to their scores on this dimension, the Netherlands has a pragmatic society, while Australia has a normative society. The core difference between these two societies is the way they approach tradition — a pragmatic society adapts tradition to changing conditions, while a normative society adheres strictly to tradition. Specifically, the Netherlands legislated voluntary euthanasia 20 years before Australia and liberalized the applicable areas and applicants for euthanasia, reflecting its long-term orientation. In contrast, the legislative process for euthanasia in Australia has been slower than in the Netherlands because euthanasia conflicts with the traditional culture of the Australian people and the traditional orientation of Australian doctors towards the profession — doctors are to save lives, not to terminate lives.

The three dimensions above show the legislative similarities and differences between the Netherlands and Australia, the two ICCPR States Parties passing voluntary euthanasia laws. Regarding similarities between the two countries, both are characterized by individualism, leading to a tendency for the Netherlands and Australia to grant the right to self-determination to enable individuals to make end-of-life decisions. In terms of differences, the Netherlands is a feminine and pragmatic society, leading it to establish more liberal policies on euthanasia, and make broader progression in this regard.

However, it does not equivocally suggest that the Dutch policy is superior to that of Australia. On the contrary, these policies can only be considered as the most suitable for Dutch society, because rapidly changing science and technology are constantly challenging existing perceptions and laws about euthanasia. For example, some ‘lock-in’ patients used the brain-computer interface system to express that they felt happier than the time when they had not gotten this disease. Prior to this, people would take for granted that patients with ‘lock-in’ syndrome would want to terminate their misery with euthanasia (CNN, 2017). From this perspective, there is some justification for Australia’s cautious approach to allowing euthanasia for the mentally ill.

Conclusion

To conclude, the legislation on euthanasia seems more of a social issue related to the cultural attributes of each ICCPR State Party. Therefore, it is unlikely that the Convention will provide a unified answer regarding whether the application of voluntary euthanasia is suitable for each individual and every member state. Thus, it is reasonable for the HRC to leave the text of ICCPR open so that each member state can exercise its discretion in regard to domestic euthanasia issues. Nonetheless, the following can be concluded: an individualistic culture appears to promote the passing of voluntary euthanasia legislation; a feminine culture is prone to update euthanasia laws to improve people’s quality of life; a pragmatic culture tends to enable euthanasia laws to evolve with the times and public needs.

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- Mental Health Act 2013* (Tas).
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- Voluntary Assisted Dying Act 2019* (WA).
- Voluntary Assisted Dying Act 2019* (WA).
- Voluntary Assisted Dying Act 2021* (Qld).
- Voluntary Assisted Dying Act 2021* (SA).
- Voluntary Assisted Dying Act 2021*(SA).

Appendix 1. Characteristic form

First Author	Date	Lang Country	Mean Age (SD)	Groups Tested	Task
Alloway	2017	English	9.9(11.98)	DD&TD	Mr.X test
Moura, O	2015	Portugal	9.8 (1.38)	DD&TD	Mr. X test
Luo, Y	2013	Chinese	9.8 (1.08)	DD&TD	Corsi span task
Wang	2013	English	113.76 (7.8) (months)	DD&TD	spatial recall task
Booth	2013	English	10.7(0.42)	RD&TD	S-CPT
Menghini	2011	Italian(primary)	9.8(0.7)	RD&TD	Visual -spatial Span Task
Menghini	2011	Italian(middle)	12.4(0.9)	RD&TD	Visual -spatial Span Task
Attree	2009	English	13.4(0.717)	RD&TD	VE task
Marzocchi	2008	Italian	9.38(1.34)	NC&RD	SoP errors
Kibby	2008	English	9.81(2.59)	RD&TD	Dot Locations Learning and Faces
Willcutt	2005	English	11(2.4)	RD&TD	CANTAB
Jeffries	2004	English	129.6 (28.67) (months)	RD&TD	WM block recall span and WM mazes memory span
Swanson	2001	English	11.06(2.17)/11.49(1.97)	RD&TD	Visual Matrix
Swanson	1996	English	8.07(0.39)	RD&TD	Visual Matrix

Appendix 2. Data extracted from the articles

Author	Year	Language	M Age	SD Age	Task	N(D)	M(D)	SD(D)	Control Type	N(TD)	M(TD)	SD(TD)	Score	N	a	Var	J
Alloway	2017	English	9.9	11.98	Mr. X test	24	95.38	18.55	age	50	102.88	19.25	standard	74	-0.389028	0.06268825	0.98969072
Moura, O	2015	portuguese	9.8	1.38	Consi Block Test	50	7.18	1.53	age	50	7.74	1.93	RAW	100	-0.3191155	0.04050917	0.99240506
Moura, O	2015	Portuguese	9.8	1.38	Rey Complex Figure Test	50	15.25	5.67	age	50	15.86	5.77	1.Central Executive(A) This task required that the child correctly recall a series of two to eight digits in the reverse order. One point per trial was given for correct recall	100	-0.1059294	0.040056	0.99240506
Booth	2013	English	10.7	0.42	S-CPT	21	6.57	2.06	age	21	6.38	1.2	standard	42	0.11063416	0.09538381	0.98159509
Luc, Y	2013	Chinese	10.2	1.08	Consi span task	15	3.5	1.24	age	15	3.4	0.83	standard	30	0.0923047	0.13347534	0.97391304
Wang	2013	English	113.76	7.8	spatial recall task	46	98.74	14	age	45	105.11	12.56	standard	91	-0.6237089	0.04609879	0.99164345
Menghini	2011	Italian(primary)	9.8	0.7	Visual -spatial Span Task	28	9.2	2.9	age	22	14.7	6.2	nw	50	-1.166607	0.09477855	0.98461538
Menghini	2011	Italian(middle)	12.4	0.9	Task	26	9.7	2.4	age	24	15.7	5.5	nw	50	-1.4124188	0.10007747	0.98461538
Althee	2009	English	13.4	0.717	VE test	21	14.61	0.56	age	21	12.67	0.45	standard	42	3.74871286	0.26253391	0.98159509
Kibby	2008	English(USA)	9.81	2.59	Dot locations learning	23	102.61	12.24	language	30	103.5	11.61	standard	53	-0.0737937	0.07686297	0.98550725
Kibby	2008	English(USA)	9.81	2.59	faces	23	94.78	11.43	language	30	96.83	11.63	standard	53	-0.1750055	0.07710053	0.98550725
Marzocchi	2008	Italian	9.38	1.34	Self Ordered Pointing Task	22	-16.5	1.34	language	30	-21.3	6.8	nw	52	0.90059683	0.08658687	0.98522167
Wilcutt	2005	English	11	2.4	CANTAB	109	-46.2	19.6	language	151	-37.2	16.4	nw	260	-0.5038795	0.01628509	0.99710145
Jeffries	2004	English	129.6	28.67	WM block recall span	21	4.05	0.67	language	40	4.25	0.74	nw	61	-0.2754244	0.07324084	0.9874477
Jeffries	2004	English	129.6	28.67	span	21	4.14	1.39	language	40	4.35	1.27	nw	61	-0.1580629	0.07282383	0.9874477
Swanson	2001	English	11.49/10.72	1.97/2.25	Visual Matrix	16	3.87	1.31	age	20	3.9	1.2	nw	76	-0.0350594	0.23750809	0.98996656
Swanson	1996	English	8.07	0.39	Visual Matrix	22	2.81	0.95	age	34	4.02	1.08	nw	56	-1.1570994	0.08682059	0.98630137

Appendix 3. Quality appraisal.

The quality of the studies is assessed according to these questions (Critical Appraisal Skills Programme, 2017)

First Author (Year)	Relevance		Population				Measures			Results		Summary of Study Limitations/Specific	Overall Quality	
	1	2	3	4	5	6	7	8	9	10	11			12
Moura(2015)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	No CB test	High
Luo(2013)	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	small sample size; difference in the mean age reported and the result calculated from the form	High
Wang	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		high
Alloway	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		high
Booth	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		high
Marzocchi	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		high
Swanson(2001)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		high
Wilcutt	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	large sample	high
Swanson(1996)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	negative : abbreviation confused	high
Menghini(2011)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	do not afford the data of SD age	high
Kibby(2008)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Unbalanced number of sample	high
Jeffries(2004)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Unbalanced number of sample	high
Attree(2009)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		high

Grammatical Errors in Written Assessments of Non-Native English-Speaking Undergraduate Students and Pedagogical Implications in Correcting Mistakes

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Abstract: This paper examines the English grammatical errors and their patterns in the written assignments of a General Education course at City University of Hong Kong. Subjects are 60 local and non-local (exchange) undergraduate students who are all L2 learners with diversified education and disciplinary background (i. e. their major of study) which are unrelated to English language studies. The objective of this paper brings to the foreground a broad discussion of L2 undergraduate learners' average syntactic ability in terms of written assessment. This paper is an attempt in classifying the patterns and categories of grammatical errors committed by students who were brought up and educated in non-native English-speaking countries. Thus, pedagogical recommendations are offered for both L2 learners and educators in tertiary education settings in such ways as to calibrate how and in what manner English language as the medium of instruction can lead to more enduring effects in learners within non-native English-speaking countries.

Keywords: Syntactic Errors, Second Language Acquisition, Pedagogy

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Introduction

English is the medium of instruction in all universities in Hong Kong. Local students who acquired Chinese as first language (L1) and English as second language (L2) can generally handle simple English communication in class. However, grammatical errors are often noticed when it comes to English writings, as it is considered the most difficult skill to acquire by many English L2 writers (Nunan, 1999).

L2 learners tend to apply the rules and structures of Chinese language in their English writings (Timina, 2013) This direct transfer of the mother tongue linguistic structure and rules to the target language is defined as L1 interference. L1 interference results in grammatical errors caused by the influence of the L1, which is nothing new in L2 acquisition. Yet, it is still an essential factor to be considered regarding education in Hong Kong, as

Hong Kong is a bilingual community with British colonial and historical influence.

Since Hong Kong is a bilingual community, with Chinese Language (both Cantonese and Mandarin) as L1 and English Language as L2, it is of paramount importance for undergraduates to equip themselves with respectable English writing proficiency before graduation. According to Hong Kong Curriculum Development Council (2017), one of the key learning outcomes is to “emphasize the importance of *text grammar* through heightening students’ awareness of how *grammar* affects the coherence, structure and tone of a text.”. Hence, there is a need to examine L2 learners’ writing proficiency in terms of grammar accuracy under the context of tertiary education in Hong Kong.

Objectives

This qualitative case study aims to (1) Identify the common grammatical errors found in the individual self-reflection reports written by L2 undergraduate students; (2) Examine the specific difficulties faced by L2 learners of English under the context of tertiary education in Hong Kong; (3) Explore pedagogical strategies and give advice in terms of course design for both teachers and learners to enhance teaching and learning effectiveness.

Literature Review

Various studies have pointed out that there is an interference or transfer of students’ L1 (Chinese language) to their writings in L2 (English language), which explained their grammatical errors in English writings. (Ghabool et al., 2012; Ye, 2013; Dipolog-Ubanan, 2016; Ngangbam, 2016; Yu & Chen, 2021; Al-Saggaf et al., 2022) When students whose L1 is Chinese write in English, the linguistic rules of their L1 tend to be adopted due to a direct translation from Chinese into English. The result is referred as “Chinglish”, a mixture of Chinese and English, which is ungrammatical and problematic in academic writing (Timina, 2013).

Ghabool, et al., (2012) has investigated Malaysian L2 students’ English writing problems. The findings demonstrated that L2 students have problems in writing tasks, especially in grammar. L1 interference was also noticeable in their English writings. On the other hand, Al-Saggaf et al. (2022) has conducted a research on 73 Malaysian L2 students. The findings of this study have also manifested that L1 interference can be observed from written assignments in terms of grammatical mistakes and spelling mistakes.

Relevant studies were previously conducted on university students in Hong Kong, but usually with a narrower research focus or with a different sample group. Flowerdew (2006) identified a range of errors in the use of signaling nouns (e.g. argument, fact) in argumentative essays written by Cantonese L1 first-year students at a university in Hong Kong, whilst Lee (2004) conducted error analysis on a group of Hong Kong high school L2 students, with emphasis of how teachers can give constructive feedback on students’ grammatical mistakes.

In regards of the above-mentioned studies, certain difficulties were faced by ESL learners in both secondary and tertiary education contexts. It can be interpreted that ESL learners most likely encounter difficulties in tense, verb forms, language use (grammar) and subject-verb agreement errors. Thus, this paper sheds light on bringing a broader scope of the area of research under tertiary education context.

Methodology

Error analysis is a branch of applied linguistics emerged in the 60s (Khansir, 2012). In this case study, data was collected in the form of individual self-reflection report for an undergraduate course. Students were asked to reflect on the learning experience throughout the course, which encourages them to express personal observations and jargon-free thoughts. There was no restriction on the structure of the report, students were encouraged to write in a free-thinking mode.

Subjects were 60 undergraduate students who were all L2 users with diversified education background. They were taking a General Education course at City University of Hong Kong. All the samples were collected from an online internal platform where students were asked to submit their reports via an internal online submission link. Samples were encoded with student ID numbers instead of the students' names. 52 out of 60 students are local students in Hong Kong, who acquired Chinese as their mother tongue and English as their second language. The remaining students acquired other languages as L1, such as Urdu and Korean; and they also acquired English as second language. All these students were year 1 to year 4 undergraduate students from School of Business, School of Science and Engineering, School of Social Science, School of Arts and School of Law. Their major of study were not in the area of English language or linguistics.

This study focuses on examining the following categories of grammatical mistakes committed by undergraduate students in individual written assignments: (1) Tenses and (2) Subject-verb agreement. The error-analysis procedure was conducted according to the following three steps (Huang, 2002)

1. Data collection
2. Identification of errors
3. Categorizing errors into different types

Errors of the collected data in the form of individual self-reflection report were identified and classified into different error categories by two raters who were reliable English grammar experts.

Discussion

Incorrect Tense

The linguistic system of English tense is found to be one of the biggest challenges for L2 students. Referring to Dulay et al. (1982), we can understand cases of L1 interference by comparing the language systems between L1 and L2. The system of Chinese language does not involve verb tense, in which time adverbs are inserted in

sentences to illustrate the time of action, regardless of whether the action takes place in the past, present, or future, the Chinese verb remains the same in both spoken and written discourse. (Dipolog-Ubanan, 2016). The following are some of the illustrations:

“Since the Hong Kong government *close* all sports centres last year”

“In the past, we *are* difficult to reach the manufacturer which *is* the reason why there *is* fewer entrepreneurs in the past”

“A company or brand *become* less popular after finding a wrong KOL in past year”

“These have absolutely *build* trust between me and the brand”

“Before taking this course, I always *assume* that small businesses probably do not have enough budget to hire a team for conducting a detailed marketing plan for them”

“They have *make* purchases on the captured item”

“I remember while I *am* discussing the class exercise with my group mates”

“Before this course, I *have* a sense that Hong Kong Business opportunities are diminishing when *compare* to other countries and cities.”

“The interest in business industries, operations and management has *lead* me to choose this course”

“The lesson pointed out the 6 major marketing variations including public relations and brand identity which I had never *spot* them before”

“I have realized that digital marketing through social media will *comes* to a problem about the trustworthiness”

“I *learn* that many people buy NFT for emotional or practical purposes but NFT *had already been* popular on business platforms”

No Subject Verb Agreement

Apart from English tense error, subject-verb agreement is another noticeable problem for L2 learners. In English, a subject-verb agreement is a must in all sentences, which involves singular/plural forms of verb; whereas the Chinese writing system does not require subject-verb agreement, since the quantity of subject or object is merely indicated by numbers (Hsieh, 2009; Timina, 2013). It is therefore explainable that some students found it confusing to determine whether a particular term is countable or uncountable, singular or plural, and whether a particular subject or object can be added with the suffix “-s”. The followings are some examples.

“For most *peoples* in the world, they compare Hong Kong to Singapore”

“The inspiring career-oriented guest talk was very fruitful in my *learnings*.”

“Every bad *news* about a company *spread* so quickly that it easily affects the company's image”

“To be more clear, if one KOL *are* dedicate”

“...Which is the reason why there *is* fewer entrepreneurs in the past”

“The inspiring career-oriented guest talk was very fruitful in my *learnings*.”

“Acquiring new customers are undoubtedly essential for businesses.”

“At last, we have agreed that as long as the child are not forced to work and given a good working condition”

“In addition, the class exercise of lecture 2 provide the opportunity to discuss how metaverse foster the economy with the groupmates”

“Other countries like Singapore is growing fast in the recent years.”

“When the company utilize blockchain technology”

“It is universal knowledge that when the company collect client’s personal information”

“The metaverse refers to people performing a series of activities in the virtual world with virtual images, such as entertainment, economy, academic, other activities in different fields and reduce the dependence on the real society”

“Technology advancements has also created a platform for cybercrime and fake information”

The root cause of tense error that students committed can be perceived as the consequence of the differences in grammar between their L1 (Chinese) and L2 (English). Brown (2006) claimed that the difficulties for students to learn L2 depend mostly on the differences between L1 and L2. Thus, the bigger differences there are between the two language systems, the more the L1 would interfere in L2 learning.

Conclusion

The errors were found committed due to mother-tongue (L1) interference and lack of grammatical knowledge. The findings of this case study coincide with previous relevant research studies by Ye (2013), Timina (2013), Dipolog-Ubanan (2016), Ngangbam (2016), Yu & Chen (2021), Al-Saggaf et al. (2022). This study sheds light on potential future research directions, such as how to explore in what other forms of syntactic errors (e. g. incorrect use of adverbs and prepositions) with a larger sample group, or to compare by comparing L2 students whose major of study are English language or linguistics. Additionally, quantitative research tool including questionnaire can be adopted, in which L2 students are asked to rate which aspect of L2 acquisition do they find the most difficult. Apart from the above-mentioned approaches, qualitative methodology can be a possible research tool, such as conducting interview with L2 students to better understand their needs in English language learning.

Recommendations

Pedagogical tactics are suggested to be modified in order to accommodate the needs of L2 students, so as to enhance learning effectiveness in terms of English writing. In the short term, teachers are suggested to specify the common grammatical mistakes committed by L2 English learners, to avoid language interference and for a more effective impact in learning and writing in English language. It is also advised to design classroom activities that integrate writing with other language skills (e. g. Designing business negotiation simulation or debate with a focus on subject-verb agreement). In the long run, a well-designed pedagogy giving specific

attention to the needs of L2 learners of different proficiency levels, such as providing organizational proofreading support. Educators should embrace the diversity with positive attitude, given that L2 learners of English language may possess different English proficiency.

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Current Problems and Solutions for Social Studies Course

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Abstract: This research is the reason for the research to contribute to the evaluation and solution of current problems related to social studies education from the eyes of social studies teachers, their opinions and solution suggestions, to guide today's problems. In this study, qualitative design was used as it is the ultimate goal to identify current and future problems. The study group consists of 50 social studies teachers who work in Mardin and are selected according to their accessibility. Discourse analysis and content analysis techniques from qualitative research approaches were used. While the general tendencies and ideas in the research were revealed with content analysis, a critical perspective was used by discussing the views in depth with discourse analysis. According to the results obtained; It is seen that the school affects the readiness and motivation of the student, the hereditary / mental state of the student, how the parents direct their child, the financial conditions directly affect the student, the situation of reaching the auxiliary source, the success of the environment. It has been concluded that parents' attitudes and socio-economic conditions are considered important, education awareness should be created in parents, parents should be in cooperation with the school, and parent visits should be continuous. It was concluded that exams do not measure success. In the light of the results obtained; School and curriculum should be in the same direction, schools should be physically improved, and the budget of schools should be increased. While creating a new education system, suggestions were made such as negotiating with all occupational groups and making arrangements in line with the needs.

Keywords: Social Studies, Solution Suggestions, Problems

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Introduction

Atatürk aimed to make the Turkish education system national, science-oriented, viable and secular. This goal has not been fully achieved due to the fact that memorization is at the forefront of schools, education inputs and

outputs do not match, the needs of society are ignored, politics oriented, central and results oriented (Onur, 1994). Educational policies have been shaped by the powers and a military order has been established by trying to make individuals think in certain patterns, especially in disguise. It is intended to breed generations that obey all the rules of the state. The best example of this situation is the views of the powers that established and eliminated the Village Institutes. Different countries' systems have been continuously introduced without taking into the needs of the country (Aktan, 2019; Alanoglu & Karabatak, 2021; Alexopoulos et al., 2022; Alshammari, 2022; Arslantas & Kurnaz, 2017; Beard & Nyutu, 2022; El Takach, 2022; Ilhan et al., 2021; Kim & Wynne, 2021; Medina-Jerez & Middleton, 2022; Öztürk, 2021; Simsek, 2012; Yildirim & Ozdener, 2021). When we tried to implement these education systems in existing schools in the country, many problems arose, such as physical structures of schools, problems experienced by foreign teachers and administrators, exam and class availability (Abu, Bacanak & Gokdere 2016). The contribution of this study in exposing the problems faced in the continual change of the syllabus, the inadequacy of class time, the factors affecting student achievement, the parent's attitude towns the course, and the proposals for solutions to these issues.

Method

Model of the Research

This study aimed at social studies teachers' problems and solution proposals used to take views from common uses of qualitative research (Gönenç and Açıkalm 2017, p.28; Axist, 2019, p.368). Editing and classifying the available data and achieving the result is content resolution (Cohen, Manion and Morrison, 2007). With content analysis, general trends and views in research are intended to be put out in description (Van Dijk, 1997; Lush, 2013). In this analysis, the goal is to make similar findings into concepts and categories and provide an understandable interpretation to the reader (Lightning and Lightning, 2013).

Workgroup

This research was conducted in Mardin province with 50 social studies teachers who were selected on the basis that they could be accessed in central and rural primary schools under the Ministry of National Education. Information on the descriptive characteristics of the teachers involved in the research was presented in Table 1.

Table 1. Characteristics of teachers involved in the study

Characteristics	f
Gender	
Woman	7
Male	43
Working Seniors	
1-20	45
21-30	5
Where They Take Charge	
Centre	49
Rural	1

As seen in Table 1, 7 of the teachers interviewed were women and 43 were men. Close to all teachers work in the center.

Analysis of Data

The data obtained in this research were first subjected to a descriptive examination in accordance with the content analysis technique. Codes and categories have been created. Content analysis in qualitative research consists of the classification of the obtained data and the stages of obtaining theoretical results (Cohen, Manion and Morrison, 2007).

Results

Table 2. Insights into Factors that affect Student Success

Factors	f
Student Based	
Intrinsic factors	
Student readiness affects student achievement	9
Student motivation affects student success	6
The student's genetic status affects the student's success	5
The mental state of the student affects the student's success	3
Student awareness/awareness affects student success	3
External factors	1
The environmental conditions in which the student is located affect the success	18
Student's access to technological materials affects success	7
Circle of friends The student's circle of friends plays an influential role in the student's success	6
Family Based	
The family affects the student's success	16
Parental attention has an impact on student success	13
The importance that the family attaches to education affects the success of the student	13
The home environment affects student achievement	10
The educational level of the family affects the success of the student	9
Cooperation of the family with the school staff is effective in the success of the student	5
Parental pressure has an impact on student success	5
Socio-economic conditions have an impact on student success	9
Student nutrition affects student achievement	3
Financial conditions affect student success	2
Spiritual conditions affect the student's success	2
School-Based	
School staff have an impact on student success	16
The physical conditions of the school have an impact on the student's success	13
Smart board has an impact on student success	10
Educational tools affect a student's success	7
Class size affects student achievement	5

Regarding the category 'The environmental conditions in which the student is located affect success':

“ .. We live in a neighborhood, a neighborhood with a very low socioeconomic status due to a neighborhood that has received immigration from the villages. .. When we look at the people who go elsewhere, the people who go to the west, we see that they are starting to recover even more as a success...” 8t

It is stated that the environment directly affects success. Material conditions, as well as the environment, have a guiding effect on the life of the individual. In the category 'Financial conditions affect the success of the student', it is stated that they had to leave the school due to their financial impossibilities. 32t's view on this matter: "... The economy also affects a lot. For example, we could not send our two brothers. Because of the seasonal work." 32t.

Table 3. Findings about Textbooks

Findings	f
I'm not happy with textbooks	41
There should be a short and concise exam question in the form of a lecture grade	14
Textbooks need to be simplified very intensively	14
Seventh-grade subjects are too much and abstract	7
I'm happy with textbooks	5
There should be more activities	5
Textbooks are good compared to old years	3
Up-to-date information needs to be added	3
Teachers need to be informed about constructivism in in-service education	2

I am unhappy with textbooks, "it was highlighted that social studies textbooks distributed within National Education are quickly worn out:" "*Because books can be very dispersed, their pages can be ripped out, there is such a problem.*" 36t." You need to tell teachers about in-service education as well as structuring "category participants growing up in the education system that predates the structuralist system states that there should be in-service training for teachers. 14t's view: "*newly appointed teachers can describe structuralism but you need to inform former teachers about structuring in-service education.*"

Table 4. Findings on parent attitude's role in student achievement

Findings	f
Parents' attitude matters	47
Educational awareness must be built	25
Socio-economic conditions	20
The school must cooperate	19
Parent doesn't care about student	13
Family visits must be made	12
Parent can't read or write	6
Parents want their children to do what they can't	5
Don't be pressured by parents.	5
Guardian's priority is not child	1
There are parents focused on exams	1
I think they put too much responsibility on it	1
Student coaching system	1
Necessary conditions can be provided if the MEB is autonomous	1

In the category "Parents' attitude is important", the participant with the code 6t talks about the importance of the parents on the child: *"In student success; I say at least as much as the teacher with the school, the least effective the parents! I think that warning them and suggesting them will increase the success."* 6t. In the category of *'If the Ministry of Education is autonomous, the necessary conditions can be met'*, it was stated that the inspections were insufficient by the MEB with the code 25t:

"The ministry of education should be fully autonomous in itself and should be subject to the state of self-supervision so that when a teacher comes to the east or goes to the countryside of any region, he should not feel obliged to go there."

Discussion and Conclusion

It seems that the main reason why all these problems are not solved is based on political reasons. In the results of Tok (2012), it was concluded that the ideologies of the political parties in Turkey regarding education are in line with the party they are in. It is seen that the philosophy of education is constantly changing, and that each power that comes to power shapes education in line with its own views, and this situation directs the content of education. When the results of Usta's (2015) research are examined, it is seen that the education system of a country is directly related to the political party at the head of the country. It is seen that the changes made in the education system directly change situations such as class time, norm status of the teacher, books, and exams. It is concluded that education should be separated from politics and that if this situation is achieved, the deficiencies in the field of education will be eliminated even if it is slow (Noroozi, & Sahin, 2022a, 2022b; Ortaş, 2005). Another situation is that the education system should be designed in line with the innovations brought by professional groups and the world during the planning phase of education. While the mistakes made, designing the education program and the planning stage of the training program should be arranged at the same time as different stakeholders such as equipping teachers and organizing schools (Yeşil & Şahan, 2015), while the results coincide with the current study; In Başdemir's (2012) research, he argued that this situation is a great responsibility for the Ministry of National Education in such a large country and that education should be switched to the contract school system so that it can develop new techniques in education. It is stated that a great responsibility will be lifted from the state and the way for the breakthroughs to be made in education will be opened.

Recommendations

- All stakeholders in education should be arranged and the schools should strengthen their infrastructure according to the curriculum and all schools should be equal in this sense
- Financial support should be provided to schools and study classes should be opened in schools.
- A multifaceted development of students should be ensured.
- It should negotiate with professional stakeholders and structure the education system within the needs.
- Teachers' opinions and solution suggestions should be taken into consideration in the education draft and solutions should be offered to their expectations.

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College Students' Perceptions of Chaperones in Opposition to Hookups or "Body Dating"

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Abstract: Studies on the socialization of American college students indicates a pervasive trend in hookups as opposed to the traditional dating. Hookups are associated with fraternity and sorority parties in which two individuals "hook up" and have a sexual encounter without the commitment of developing a formal relationship. This research was based on inquiry if the practice of hookups was still popular and prominent among undergraduate college students. Two focus groups and two independent investigative studies of undergraduate students were collected over four independent semesters. The results indicated that college students do scan the physical appearance of prospective partners as well as friends, thus, perhaps promoting the concept of body dating as reference to hookups and a possible perpetuation of body image issues. Contrarily, the results indicated that hookups and its associated at-risk behaviors such as alcohol abuse or coercion were not supported or desired, but rather, this sample of college students actively engaged in roles of chaperones as a means for developing a safe environment. The majority of this sample also identified themselves as religious, having low levels of depressive symptoms but higher levels of anxiety and stress tendencies.

Keywords: College Students, Dating, Hookups, Chaperone

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Introduction

There has been a plethora of research on the social behaviors of college students in regards to hookups and at-risk behaviors. Hookups are associated with two consenting individuals who "hook up" with the intention of having a sexual encounter without commitment of the development of a relationship, rather, a consensual one-night stand. Hookups are prevalent across campuses as a quick and easy social encounter with the purpose of casual sex among two strangers or acquaintances who usually meet at permissive social functions such as fraternity and sorority parties (Bartoli & Clark, 2006; Bogle, 2008; Freitas, 2013; Mark & Murray, 2012; Paul & Hayes, 2002; Paul, McManus, & Hayes, 2000; Siebenbruner, 2013). This trend as a social encounter may have replaced the traditional dating roles since the ambiguity and confrontation of intra and interpersonal thoughts and emotions and personal risks of rejection seemed to be eliminated (Bogle, 2008; Garcia, Reiber, Massey, & Merriwether, 2013). However, Bogle (2008) and Garcia (et al, 2013) disclosed that there are college students

who had hoped that a hookup could, in fact, lead to a continuing romantic relationship, and Kerner (2013) concurred in stating that college students, who had engaged in a hookup encounter, did so under the belief that it was a first date.

Body Dating

In an investigation of the initial process of partner selection (N = 259), a sample of undergraduate college students were asked that during introductions to someone for the first time, did they scan that person's body parts. Seventy-four percent of the responses indicated that they did so (44% males and 57% females). Males indicated scanning the appearance of the head and hair followed by the chest and buttocks. Females indicated also scanned the appearance of the head and hair followed by the shoulders and stomach. Surprisingly, respondents also indicated that they scanned friends as well. Respondents were also obsessed with their own appearance with 39% of males identifying having thoughts of personal appearance from frequently to constantly all day compared with 66% of females who identified thinking of personal appearance frequently to constantly all day. This tendency of obsessing over one's personal appearance and body scanning others may invoke a covert norm or custom of body scanning which perhaps naturally leads to body dating or hookups with the potential desensitization of the value of actually knowing each other before engaging in sexual encounters...

Thus, current trends for developing social encounters and/or dating relationships among college students displayed a variety of scenarios for hookups: 1) to meet someone and have casual sex with no commitment as referenced as a "one-night stand," 2) to meet someone and have casual sex on multiple occasions as referenced as "friends with benefits," 3) to meet someone and have some sexual contact without vaginal penetration such as oral sex in the guise of allowing vaginal penetration only with the hopes of future dating, 4) to meet someone and have sex/some sexual contact and commence a dating relationship, and 5) to meet someone and have some sexual encounter and terminate future contact. Clearly, although hookup encounters may initially provide ease of meeting someone with the intention of consensual sex, it can become problematic to ascertain the genuine meaning of the potential consequences from the hookups (Terneus, 2021).

As Kerner (2013) and Bogle (2008) warned, participants who could become confused as to the meaning of the sexual encounter and question if consenting to have sex with a person for the first time deemed a date, a beginning of a date, or the promise of a romantic relationship, may be left in feelings of regret and low self-esteem. Depression and sexual regret stemming from feelings of being used or of using others from hookups was also supported in other findings (Eshbaugh & Gute, 2008; Garcia, Reiber, Massey, & Merriwether, 2013; Paul & Hayes, 2002; Walsh, Grellos, & Harper, 2006). Bogle (2008) also suggested that the alcohol consumption, peer pressure, and potential for coercion may further camouflage the clarity of providing "consensual" sex as well as the outcomes and intentions of the hookups. Paul, McManus, and Hayes (2000) reported that women who imbibed in alcohol were perceived by men as a social cue that the women were sexually available. Therefore, the literature described hookup cultures as social encounters which promoted at-risk behaviors of alcohol usage and coercion. Also, although the majority of participants perceived hookups as

positive, the attached ambiguity of the meaning of the sexual encounter left nearly half of the respondents with negative feelings of regret, disappointment, and confusion for both genders (Paul & Hayes, 2002).

Two focus groups (n=50) discussed the means of dating and hookups in two consecutive semesters. Both focus groups adamantly prohibited speed dating and hookups as a means of dating due to sexual regret, the high potential for peer and sexual coercion, and alcohol intoxication. The focus groups were united in the use of chaperones for one to two pre-dates. The pre-dates allowed two interested parties to have the opportunity to socially engage and get to know each other before moving forward to a formal date. During the pre-dates, chaperones would accompany the pair as a means of guardianship, i.e, making certain that both parties returned home safely after alcohol was consumed, providing a sense of security, and providing prosocial friendship. The roles of chaperone were a traditional cultural practice which was not readily used in the recent past but has been successfully reinstalled at this campus community. Based on the literature and input from the two focus groups, this researcher developed an investigative survey composing of questions about relationships, mental health issues, and religious practices. After obtaining IRB approval, the survey was administered the following subsequent semester to undergraduate students.

Method

Participants

Participants (N= 85; 28 males and 57 females) were undergraduate students at a public university in a small southeastern community in the Bible Belt region of the United States. The sample ranged in age from 18 to 22 years or older ($M = 19.23$; $SD = 1.24$). The majority of the participants reported being European American (88%), followed by Asian/Pacific Islander (4%), First Nation/Native American (4%), African American (3%), and other (1%). In regard to relationship status, participants identified themselves as In a Committed Long-term Relationship (22%), Single and Not Dating (26%), Single but Looking for a Partner (24%), Partnered (22%), Single and Dating Multiple Partners (2%), and Married (4%). The majority of the participants (75%; 64% males and 80% females) had identified themselves as religious or spiritual, and (33%; 27% males and 36% females) attended church/service or spent time in prayer, meditation, or readings more than once a week.

Results

This researcher designed exploratory questions regarding forming relationships/dating. The majority of the questions were dichotomous in design and required a “yes” or “no” response while a few questions were posted with Likert-style responses.

Relationships

The majority of participants responded that they were not pursuing hookup relationships as defined as casual sex and dating several people simultaneously (79%; 64% males and 86% females), and that they were not living life

in the moment inclusive of sexual relationships with multiple partners simultaneously (80%; 68% males and 86% females) (see Table 1). Rather, the majority of this sample dated with a purpose in developing a relationship with the intention of marriage as an outcome (90%; 86% males and 91% females) and searched for a partner who could be identified as a best friend who would work together to overcome obstacles (95%; 96% males and 91% females). The majority of this sample also identified themselves as having awareness of themselves and could specifically identify similar values and characteristics in another person who would be a strong match for a long-term relationship (93%; 96% males and 91% females) and could identify the boundaries of friendship and a romantic relationship (93%; 89% males and 95% females) which could become blurred during hookup encounters.

Table 1. Relationships

Variables	Yes	No	M	SD
I am looking for someone who enjoys life to the fullest without personal commitment. I believe casual sex is beneficial for all parties if they are consenting adults. I believe a person can date several people simultaneously without feeling constraints.	21.43%	78.57%	1.79	0.41
I date in order to enjoy life in the present moment and experience all that life has to offer including sexual relationships with multiple partners simultaneously.	20.24%	79.76%	1.80	0.40
I enjoy whatever life brings me; I am a free spirit and open to whatever unfolds before me.	46.43%	53.57%	1.54	0.50
I date with a purpose; to find a lifetime partner and a committed relationship resulting in marriage.	89.29%	10.71%	1.11	0.31
I am looking for someone who would be my best friend, to be my Partner, and to work together as a team in overcoming obstacles.	95.24%	4.76%	1.05	0.21
I have a clear idea between the boundaries of a friendship and a romantic relationship so I can make healthy choices with a potential partner.	92.86%	7.14%	1.07	0.26
I have enough awareness about myself that I can specifically identify similar values and characteristics in another person who would be a strong match for me.	92.86%	7.14%	1.07	0.26

In regards to physical attraction, it was interesting to note that physical attraction was nearly a 50-50 split for participants who identified physical attraction as a priority; however, the majority of participants identified a reciprocal relationship in having a partner who was physically attractive and vice versa (85%; 86% males and 84% females) (see Table 2). Another source of note is an apparent conflict in that the concept of dating someone who was physically disabled resulted in 55% agreement (43% males and 61% females) and 45% of the sample who opposed dating someone who was physically disabled (57% males and 39% females) respectively; however, the majority of participants did have expectations that their partner would be committed to them regardless if they were to incur physical disability, disease, or mental illness (94%; 89% males and 96% females). It may appear ego-centric that the participants definitely preferred someone to be available to support him/her if unfortunate health circumstances should occur, however, when the role was reverse, there seemed to be a bias, at least in regards to dating someone who is physically disabled. Clearly, further investigation of dating parameters, selection of dating partners from a diversity perspective, and genders dating issues would add to the understanding and confirmation of research results.

Table 2. Relationships – Physical Considerations

Variables	Yes	No	M	SD
Is physical attraction a high priority in someone you would like to date?	47.06%	52.94%	1.53	0.50
I am looking for someone who is physically attractive to me and I to him/her.	84.52%	15.48%	1.15	0.36
I have no hesitations dating someone who is physically disabled.	54.76%	45.24%	1.45	0.50
I am looking for someone who will be there for me even if I develop a terminal disease, paralysis, or mental illness.	94.05%	5.95%	1.06	0.24

It is also interested to note that in regards to communication (see Table 3), the majority of participants identified that they were able to freely communicate without fear of rejection (82%; 82% males and 82% females), believed that their date would be honest with them (89%; 86% males and 91% females), yet, the majority of the participants were emotionally guarded as a means of self-protection (80%; 75% males and 82% females). This conflict may stem from undisclosed inner psychological issues and an area which may prove fruitful to extended research in regards to the influence of past carryover emotional rejections in present dating patterns. This conflict would suggest examining more ambiguous perceptions of trust and levels of emotions in relationships as well.

Another area to note is that 67% of the sample (almost two-thirds) believed that the person dated should know the participant well enough that the participant should not have to say what he/she wanted or liked. Perhaps, this belief of someone knowing another so well that he/she doesn't have to say what he/she wanted or liked is perceived as a strength in a relationship; however, this could be a grave lack of awareness of the pertinence of genuine and open communication between partners. This can be interpreted as a disturbing acknowledgement of a preference for depending upon assumptions and a deterrence from open communication with one's partner as well as suggesting that people do not evolve and/or change, even if minor, in some area of their life. Although hookups encounters bypass the open communication process endured during dating and relationship development, this sample who opposed hookup encounters may not have perceived open communication as a healthy facilitation of relationships.

Table 3. Relationships – Communications

Variables	Yes	No	M	SD
I am able to talk freely to the person I date without fear of being rejected by him/her.	82.14%	17.86%	1.18	0.38
I trust my date to be completely honest with me.	89.29%	10.71%	1.11	0.31
I believe that the person I date should get to know me well enough that I shouldn't have to tell him/her what I want or like.	66.67%	33.33%	1.33	0.47
I usually am somewhat emotionally guarded in relationships, so I can protect myself from being hurt if the relationship is not what I had hoped.	79.76%	20.24%	1.20	0.40

Anxiety and Depressive Tendencies

According to the Center for Collegiate Mental Health (2022 January), anxiety continues to be the most common presenting concern followed by stress and depression among college students. In a 2017 national study, approximately 24 percent of college students cited anxiety and nearly 16 percent cited depression as affecting their academic progress (United Educators, n.d.). Thus, the researcher developed a brief measure of using seven anxiety and depressive symptoms using the DSM-5 (APA, 2013). This measure was not intended for clinical use but to ascertain mental health tendencies among college students. Both mental health survey questions utilized a Likert Scale inclusive of possible answers that ranged from experiencing symptoms ranged from None, for Several Days Within Two Weeks, for More than Half of the Days within Two Weeks, and for Nearly Every Day within the Past Two Weeks (see Table 4).

At least one-third of the sample reported experiencing anxiety tendencies. The majority of participants identified experiencing anxiety tendencies of Feeling Nervous, Anxious or on Edge for Several Days within Two Weeks (42%; 46% males and 39% females), followed by Becoming Easily Annoyed or Irritable for Several Days within Two Weeks (35%; 36% males and 34% females), and closely followed by Feeling so Restless that it is Hard to Sit Still for Several Days within Two Weeks (34%; 36% males and 33% females). When asked if the participant coped successfully with academic stressors, the majority of participants concurred (66%; 64% males and 66% females) but 35% of participants disagreed (36% males and 34% females). This would seem to parallel the one-third of participants who indicated symptoms of anxiety. It would be interesting to continue further research to identify factors facilitating the emotion of worry and anxiety. Since the survey was distributed during mid-semester, perhaps, other variables of mid-term exams and assignments were prominent.

Table 4. Anxiety Tendencies

Symptoms	None	Several Days For Two Weeks	More than Half of the Days for Two Weeks	Nearly Every Day for Two Weeks	M	SD
Feeling nervous, anxious or on edge	8.33%	41.67%	20.24%	29.76%	2.75	1.00
Not being able to stop or control worrying	20.48%	32.53%	19.28%	27.72%	2.56	1.11
Worrying too much about too many things	16.67%	22.62%	29.76%	30.95%	2.75	1.11
Trouble relaxing	19.28%	32.53%	18.07%	30.12%	2.64	1.14
Feeling so restless that it is hard to sit	32.53%	33.73%	12.05%	21.69%	2.20	1.13
Becoming easily annoyed or irritable	15.48%	34.52%	27.38%	22.62%	2.70	1.02
Feeling afraid as if something awful might happen	35.71%	20.24%	17.86%	26.19%	2.27	1.22

In regard to depressive symptoms, the overall results were more indicative of positive health as compared to anxiety tendencies (See Table 5). In regard to depressive symptoms, half of the participants indicated finding pleasure in life (52%; 36% males and 61% females) followed by sleeping and eating well (41%; 36% males and 43% females), and (40%; 32% males and 43% females) not feeling lonely, thus, this would suggest that this sample was not experiencing levels of depressive symptoms as compared to anxiety symptoms. In identifying depressive symptoms, one-third (33%; 43% males and 29% females) reported Feeling Overwhelming Sadness for Several Days within Two Weeks, and one-third (33%; 29% males and 34% females) reported Feeling Tired and Exhausted Nearly Every Day for Two Weeks closely followed by Feeling Tired and Exhausted for Several Days within Two Weeks (32%; 39% males and 30% females).

It would also be interesting to note that since the survey was distributed during mid-semester, perhaps, other optimistic variables of semester break as well as campus and community social functions were occurring as well as examine the sense of tiredness and exhaustion. This score may be indicative of the 35% of participants who disagreed with coping successfully with academic stressors above.

Table 5. Depressive Tendencies

Symptoms	None	Several Days For Two Weeks	More than Half of the Days for Two Weeks	Nearly Every Day for Two Weeks	M	SD
Feeling overwhelming sadness	38.10%	33.33%	8.33%	20.24%	2.02	1.14
Not able to concentrate in class	28.57%	28.57%	20.24%	22.62%	2.36	1.12
Not finding pleasure in life	52.38%	20.24%	13.10%	14.29%	1.77	1.09
Not eating or sleeping well	40.48%	16.67%	21.43%	21.43%	2.13	1.15
Feeling tired and exhausted	11.90%	32.14%	22.62%	33.33%	2.71	1.03
Feeling lonely	39.29%	22.62%	14.29%	23.81%	2.14	1.20
Feeling as if you don't have a purpose in life	60.71%	11.90%	10.71%	16.67%	1.73	1.14

Lastly, participants were asked to rank their reason for attending college. The reason or motivation for going to college by males were: Preparing for a Career (54%), Learning and Academic Achievement (47%) and Finding a Partner (30%). The majority of females selected Learning and Academic Achievement (44%), Preparing for a Career (44%), Didn't Know What Else to do with my Life (49%), and Finding a Partner (45%). These findings are congruent with the literature regarding motivation and expectations for the college life experience. It was interesting to note that both genders (30% males and 45% females) had expectations of Finding a Partner. It is also interesting to note that 49% of females had identified that they Didn't Know What Else to do with my Life and one may ponder how this motivation to achieve this goal may have affected their dating habits.

Discussion

The literature review noted some of the more current research on hookup behaviors; however, there are several informative studies regarding how college students are conducting dating. Numerous articles have focused on alcohol abuse on college campuses. Paul and Hayes (2002) suggested that alcohol was positively correlated to hookup behaviors both in inhibiting judgment, signaling sexual availability, and possibly as an excuse to justify the lack of integrity associated with hooking up. In addition, history of hookup behaviors may indicate mental

health issues. In regard to self-esteem and hookups, both genders who had engaged in an uncommitted sexual encounter had lower self-esteem compared to those who had not (Paul, McManus, & Hayes, 2000). Other research reviews (Garcia, Reiber, Massey, & Merriwether, 2013) found that females reported more negative reactions than males in regard to hookups, specifically, thoughts of worry, increased mental distress, and unfulfilled hopes that the hookup would lead to a relationship. Studies have revealed that there are qualities or patterns of individuals who participate in hooking up. Bogle (2008) found that physical attraction was one of the top qualifications, especially for females. However, a male's status was determined by membership or leadership in a fraternity, sports affiliation, academia, and intellectual aspects.

The majority of participants responded that they were not supportive of hookup relationships as defined as casual sex and dating several people simultaneously. Rather, the majority of this sample dated with a specific purpose to developing a relationship with the intention of marriage. As per two focus groups, both genders expressed concerns about college student development publications, specifically, college students' substance abuse, coercion and peer pressure, hookup practices and consequences. In fact, both focus groups clarified that hooking up originated during high school and not college. Contrary to hookups, the focus groups consistently practiced the cultural tradition of chaperones. The specified the role of the chaperones was to provide safety and prosocial friendship to both parties for one to two pre-dates, i.e., ensuring both parties arrived home safely after drinking alcohol at a campus or social function, providing a network of friends to transfer students, etc. After two pre-dates, the parties felt more solid in their decision to move forward as a dating couple without emotional regret of a hookup encounter. The focus groups believed that chaperones were a healthy way to begin dating and opposed hookups, and often encouraged and offered other females who were depressed as a consequence of hooking up to try their alternative. The focus groups believed they were offering a positive alternative to both genders and alternative sexual orientations. It would be curious to note at what level various religions play a role in influencing dating/hookup behaviors for other cultures.

In regards to religion, Fife, Ardegoke, McCoy, and Brewer (2011) reviewed research which reported religiosity or divine relationship as a strong predictor of overall well-being and life satisfaction. In addition, religious commitment as a social cohesion and quality of life indicator predicted life satisfaction for both African Americans and European Americans. Although the majority of participants in this sample were European Americans, religious or spiritual practices occurred more than once a week. Although the majority of the participants (76%) identified themselves as being in committed relationships, it would be interesting to note if the coupleship of these relationships correlated with different religious affiliations or practice of devotion or a change of religious orientation/doctrine since most college campuses have a student religious fellowship representation that may minister differently than the participant's home church.

Conclusion

The majority of this sample albeit located in the Bible Belt of the United States rejected hookup or body dating practices. Perhaps, the culture and the support of the chaperones allowed an alternative to starting relationships

without the ambiguity and emotional regret which may often occur via alcohol abuse and peer coercion in hookup encounters. Lastly, the participants may have viewed their behavior of the college experience (alcohol, substances, sexual exploration) as behavior which were not congruent with religious principles, especially in the cultural and social norms of the Bible Belt.

In addition, the majority of this sample described themselves as prosocial and active in their religious practices which may have had a positive influence on their self-awareness, respect for others, and low evidence of depressive symptoms. However, there is a need for future research to explore and confirm: 1) the satisfaction levels of both genders between hookups and chaperones, 2) how the role of a chaperone could become exploitive, 3) the satisfaction of both genders in being emotionally guarded in coupleship, 4) how prevalent are mental health tendencies in hookups, and 5) the characteristic of physical attraction as an important quality in dating someone who is physically disabled (and type of disability) as well as mental health issues, or having a terminal disease. In sum, this sample group of college students expressed concerns regarding the recent journal articles' depiction of college students, and specifically, at-risk behaviors which seemed prevalent in publications. Their response was to proactively engage in cultural norms of chaperones and chivalry. Further research in this area will discern the success of this approach.

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Capacity Building for Organizational Resilience: Integrating Standards on Risk, Disruption and Business Continuity in the Curriculum

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Abstract: Disruption is an inevitable factor in business and society, while inability to mitigate and manage risk can cause irreparable damage to business, the economy, and our ways of life. The COVID-19 pandemic has heightened interest in standards-based strategies for risk management and crisis preparedness to enhance organizational and societal resilience. University curricula that integrate national and international standards offer students a rich skill-set for effective performance in their careers. Moving forward, we must cultivate capable professionals who understand the challenges and risks facing society, and grasp standards and systems for strategic planning, response, and recovery to promote organizational resilience and sustainable development. Our research focuses on integrating risk management and continuity standards into university curricula, based on implementation at a large private university and regional community college in the Northeastern United States. We propose and evaluate a modular approach to introduce students to specific national and international standards and teach them to identify and apply relevant standards based on the locally-driven, whole community nature of disaster, response, and recovery. Standards-based curriculum and the skills that result will be key to readiness for tomorrow's graduates.

Keywords: Standards Literacy, University Curriculum, Emergency Preparedness, Business Continuity, Organizational Resilience

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Introduction

Business and society are increasingly vulnerable to stresses that can disrupt operations, supply chains, and our ways of life. Disruption risk can be associated with a range of factors, such as information security (Yao and Jong, 2010), terrorism (Coaffee, 2016), natural hazards (Kleindorfer & Saad, 2005), climate change and related extreme weather events (Scott et al., 2020), aging infrastructure (Osei-Kyei, et al., 2021), and global health threats (McInnes & Roemer-Mahler, 2017; OECD, 2003). The inability to mitigate and manage such risks can cause significant, potentially irreparable damage. While businesses have increasingly incorporated elements of continuity planning to minimize the impact of disruption, many were unprepared to meet the challenges for continued operations resulting from the COVID-19 pandemic. This crisis has heightened private and public interest in standards-based, systematic strategies for risk management, crisis preparedness, and business continuity to enhance organizational and societal resilience and competitiveness.

National and international standards for risk and continuity management offer structured frameworks and technical guidelines that represent emerging consensus on best practice as firms seek to enhance organizational resilience (Tiernan et al., 2019). Such standards have an increasing presence in risk management, crisis preparedness and response, and organizational continuity, and these domains are interwoven in a range of disciplines, including health, safety, environmental, policy, business, and information technology, to name a few. These operational standards provide an opportunity for the implementation of systems and strategies that reduce organizational vulnerability, provide for efficient crisis response and recovery, and promote resilience. Such standards and strategies will shape how our society deals with vulnerability and disruption and will in turn shape the standards of how the professional will create value for society. Those entering the workforce must understand the role of standards in general, as well as the role that particular standards and their application can have upon professional practice. As we move forward, it is clear that we need to cultivate capable professionals who understand the challenges and risks facing organizations and society, and who grasp standards and systems for strategic planning, preparedness, response, and recovery to promote organizational continuity, resilience, and sustainable development. Curriculum that incorporates and applies key standards used in the public and private sectors offers students a rich skill-set in preparation for effective performance in their careers.

Our research supports the integration of standards-based content into university curricula, as a means to strengthen student education, learning and literacy in standards and standardization. This paper describes and evaluates a modular approach for standards-based curricula on risk, disruption, and continuity for degree programs in engineering technology, smart systems technologies, construction and environmental, health and safety management, and its impact on students entering the workforce in engineering and management disciplines. Our research involved integrating risk, disaster and continuity standards content into existing courses and programs at two institutions of higher education in the Northeastern United States. Curriculum was implemented in a range of courses at these institutions and validated by participating higher education partners at two additional institutions, providing feedback across the arc of early college constituencies and later college and graduate education. Our approach was designed to prepare students in their future roles to identify and

apply a range of relevant national and international standards based on the locally-driven, whole community nature of disaster response and recovery, and to integrate systems across several relevant standards for risk, disruption, and continuity. While the curriculum was piloted in environmental health and safety, civil engineering, and smart systems technologies courses, it is relevant and applicable to a range of disciplines that incorporate risk, disaster science, business continuity, and critical systems resilience.

Risk is a polysemantic term that lacks a consensus definition (Aven, 2012; Xu, 2008). For this work, we focus primarily on disruption risk, reflecting uncertainty and the potential for adverse outcomes such as harm or loss resulting from disruption. We conceptualize resilience as a characteristic of a system or an organization when considered as a whole. A system is understood to be stable, when it is able to remain more or less the same within a range of conditions, is flexible and able to adjust to stress (Holling, 2001; Thompson et al., 2009).

Methods

Our research involved implementation and assessment of curricular and instructional design to enhance standards literacy in the context of risk, disruption, and business continuity. Our approach integrated a selection of related standards in graduate and undergraduate curricula through design, testing and evaluation of portable learning modules, based on a proven education structure consistent with Liu et al. (2013a; 2013b) and Greenwood et al. (2018a; 2018b). Key standards included a selection of relevant frameworks and guidelines from the International Organization for Standardization, known as ISO, as well as U.S. standards from NIST, FEMA, and NFPA.

Compatible modules were developed to introduce students to standardization and standards development while incorporating and integrating specific content used in industry and society in the following three domains:

1. Risk: risk and vulnerability assessment, mitigation, and response;
2. Disruption: disaster and emergency mitigation, preparedness, prevention, and response;
3. Continuity: proactive strategies for recovery, continuity, and organizational resilience.

While traditional educational research has focused on enhancing a student's ability to acquire knowledge, more recent work has addressed how students learn and "encode knowledge" through study tasks. Karpicke and Blunt (2011) maintained the importance of considering the retrieval processes developed during learning, and Taylor and Kaza's (2011) work reinforced this notion by demonstrating how self-contained modules about computer security can successfully be embedded in introductory programming courses to increase students' security awareness. Loepp (1999) emphasized the importance of designing a relevant, standard-based curriculum while ensuring students are challenged to address real-world problems. With this in mind, the research team developed a set of self-contained, yet transposable learning modules, organized in thematic elements that can be implemented in combinations appropriate to various course learning outcomes. Each module included educational content and supporting resources with active learning components tethered to real-world situations to enhance student retrieval and retention of knowledge. Our curricular module design template is shown in

Table 1.

Table 1. Module Design Template

Component	Description
Module Overview & Description	<ul style="list-style-type: none"> - Executive summary with introduction and overview of the module - Module learning outcomes, description, and rationale - Summary of key standards included in the module
Educational Content	<ul style="list-style-type: none"> - Slides and notes for lectures with guided activities and exercises - Supplementary resources, e.g., readings, links to materials and tools - Example discussion questions and exercises
Module Assessment	<ul style="list-style-type: none"> - Example assignments - Assessment tools and methods to measure module effectiveness

Module assessment was designed to occur at multiple levels, including internal and external content review as well as evaluation of student learning. Internal faculty evaluators reviewed content for evidence that the materials reflected different cognitive learning levels, provided connection to real world contexts and situations, and connected back to the learning objectives. External content review was provided from faculty at two secondary partnering institutions as a means of content validation. Constructive feedback from these reviews was applied to refine and improve module content. Following completion of module implementation in courses, faculty evaluated student learning based on results achieved on assignments, exercises, projects, and exams.

Results and Discussion

To date, we have engaged approximately 100 students and seven instructors with our educational content across seven courses at four universities. In all courses in which modules have been completed with graded assignments, we have met our goal for student success. Ninety-one percent of students achieved a B or better on related assignments overall, based on the sum of the number of students achieving above an 80% on each assignment, divided by the sum of the number of students completing each assignment.

Feedback from instructors has been generally positive and constructive. At the graduate level, one instructor observed that students appeared to “grasp concepts well and were able to successfully apply them to the project and answer the related assignment questions,” and noted that the use of a group project allowed participant-participant collaboration to reinforce the concepts and advance students’ learning. At the undergraduate level,

two instructors noted that students really engaged with the content and case study/scenario-based assignment, and that this helped to “make content more relatable.”

Challenges observed during module implementation were related to preparation of instructors and selection and adaptation of applicable content for integration in a specific course. A new instructor in the environmental sustainability, health and safety discipline who was just introduced to the content noted that a few students “were confused by exposure to frameworks from disciplines outside of the EHS realm” and that it was a challenge for him to present some of the content that fell outside of his disciplinary expertise. Going forward, he intends to dig deeper into the module resources and adapt and integrate our content further to target the specific focus of the course, which is consistent with the aim of our module structure and approach. We plan to implement our modules in three additional courses in the current semester, taking our instructor feedback into account.

Conclusion

This research addressed methods, practices and results for integration of risk management, disruption, and continuity standards into university curricula. Our experience and assessment indicate that a modular, active learning approach to standards-based curriculum development is successful. The modules were effective for a wide range of audiences from undergraduate to the graduate level. The assessments of student learning indicated that the approach was effective in enabling students to engage in learning about standards in risk, disruption, and continuity that support organizational resilience, and to internalize, give meaning to, demonstrate, and apply this knowledge. By creating modular sets that organize standards content in smaller, thematic elements, the content can be used in and adapted to a variety of educational settings, with selection and customization of appropriate classroom activities and assessment tools. In addition, our faculty reviewers affirm our view on the usefulness and applicability of the modules to a wide range of professional programs; however, introductory materials will likely merit scaling and adaptation by the individual instructor to provide the appropriate context for their students and enhance engagement.

Finally, the facets of what it means to be a professional continue to evolve. Standards-based, systematic strategies for risk management, crisis preparedness, and business continuity can enhance organizational and societal resilience and competitiveness in what may be referred to as the age of disruption. We maintain that such standards and strategies will shape how our society addresses vulnerability and prepares for and responds to disruption and will in turn shape the standards of how the professional will create value for society. Standards-based curriculum and the skills that result will be key to prepare tomorrow’s graduates for societal challenges that lie ahead.

Recommendations

Faculty and young professionals who are not typically introduced to standards within their discipline in their

academic career can benefit from structured and formalized instruction on standards and standardization. Discipline-specific faculty education and workforce development through professional societies or credentialing organizations would extend the impact of this effort.

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Primary School Teachers' Views on the Technological Competencies of School Principals

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Abstract: It is considered important for school principals to have technology leadership competencies in digital age conditions in order to carry out education and training efficiently and effectively. Since teachers see school principals as role models, how teachers perceive the technology use skills of school principals is an important factor for the technology integration process in the school. In this context, this research aimed to examine primary school teachers' views on their school principals' technological competencies. The study was designed as a phenomenological research within the qualitative research paradigm. The participants were 15 primary school teachers working in the city center of Isparta, Turkey. Data were collected through online and face-to-face semi-structured interviews and analyzed using descriptive qualitative data analysis methodology. Participants' views were categorized under six main themes as school principal's knowledge and use of general technology in the school, artificial intelligence, cloud computing, augmented reality, cyber security, and 3D printer. The findings generally reveal that steps should be taken to increase the technology competencies of school principals.

Keywords: School Principals, Teacher Views, Technology Competencies

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Introduction

The administrators of educational institutions are responsible for the supply of information and communication technologies and the optimum use of these tools within the institution (Sincar, 2009). The developments in technology and the transformations caused by this have also necessitated change and transformation in the duties of administrators (Arabacioglu & Okulu, 2021; Bagaric & Strucic, 2021; Kara, 2021; Khan et al., 2021; Kibici, 2022; Koyuncuoglu, 2022; Makarova, Ldokova, & Egorova, 2021). School principals are expected to

work on technology acquisition, effective use of it and teacher training. It is considered important for school principals to have technology leadership competencies in digital age conditions. Within this context, exploring school managers' technology competence levels has become one of the research topics in educational research literature. This research aimed to examine primary school teachers' views on their school principals' technological competencies. Since teachers see school principals as role models, how teachers perceive the technology use skills of school principals is an important factor for the technology integration process in the school.

Leadership is defined as the ability of a leader in any community to interact with other individuals, and to direct expectations or influence people as a result of this interaction (Zaleznik, 1997). In order for leaders to fulfill their functions in the definition, they must have very important qualities such as interaction, creativity, facilitation and influence. The manager of the institution is very effective in the success or failure of that institution. According to Lambert (2005), the leadership characteristics of the administrators working in schools with low education quality are not at a sufficient level. According to Doll (1972), the ability of school administrators to realize their responsibilities in the education system is parallel to their leadership abilities.

School principals should be technology leaders, among other leadership roles (Anderson & Dexter, 2005). A technology leader is someone who uses technology and makes employees use it. School administrators need to know, understand, apply and adopt technology in order to fulfill this role (Akbaba-Altun, 2002). It is of great importance for school administrators to know issues such as the safe use of technology, the ability to organize content in accordance with technology, the training of personnel in this regard, and the provision of personnel support in realizing the role of technology leadership (Bailey, 1996, Turan, 2002). Therefore, investigating school principals' technology competence is crucial for effective technology integration into schools.

Method

This study was designed as a phenomenology within the qualitative research paradigm. Phenomenological research focuses on phenomena that we are aware of but do not have a deep and detailed understanding of, and describe the common meaning of several people's experiences with a phenomenon or concept (Yıldırım & Şimşek, 2011). It seeks individual's subjective experiences and intends to explore and describe a phenomena from the participants' point of view (Mertens, 1998). Thus, this approach was considered suitable for the purpose of exploring primary school teachers' views on their school principals' technological competencies.

The participants were 15 primary school teachers who were selected using the convenience sampling from the population of teachers working in the city center of Isparta, Turkey. Data were collected through online and face-to-face semi-structured interviews. A total of ten interview questions were developed to understand school principals' views and uses of educational technologies, encouragement and support provided to teachers and impacts on school administrative and academic success. In the interviews with the teachers, necessary explanations were made to make the questions understandable, and no time limit was applied. The data were

recorded by using voice recorders and taking notes by the researchers during the interview. The collected data were analyzed using descriptive qualitative data analysis methodology. In descriptive analysis, the data are summarized and interpreted according to predetermined themes (Yıldırım & Şimşek, 2011). The interview questions provided the thematic structure in this study. Since it is believed that direct quotations in qualitative research will be effective in reflecting the thoughts of individuals and increasing the internal validity of the research, some of the data obtained are presented without any comment.

Results

The first theme was named as “school principal’s knowledge and use of general technology in the school”. Three out of 15 teachers said that the school principal did not use technology adequately at their school due to inability to keep up with innovations and technical infrastructure inadequacies. Example comments included:

“Although our school principal does not follow and use technological innovations closely, he does not make any difficulties for our usage. I think the biggest reason for not using technological innovations is that technology develops very fast and he cannot keep up with these developments. Since he does not know how to use it, she cannot guide the teachers in this manner neither.”

“The school principal does not use technological innovations much in our school because there are not enough technological units in the school due to financial inadequacy. Even computers other than administration computers are not sufficient to be used at school...but we did not experience the negative effects of not using it.”

The remaining 12 teachers believe that their principles adequately use technology. They think that the main motivating reason for their usage is due to the necessity of using technology in our age. They gave the examples such as development of instructional materials, internal and external correspondence within the school, uses of learning management systems or student information systems, which solely depend on the use of technology. Some of them elaborated their opinions as follows:

“Not all principals up to now were using it. Maybe they did not know because of their age. Even turning the computer on and off was very difficult for them. However, they are using it now. Time made it necessary.... Even the logo of our school was prepared by our principal. I think it accelerates the operation of the school. It is nice to move forward with technology without having to deal with paperwork, etc.”

“Yes, he uses enough. Especially with the WhatsApp application, our principal can send the information coming to the school to all teachers at the same time and get feedback. He makes meetings and seminars more motivating and remarkable by using technological tools.”

“Our school principal tries to follow and use technological innovations in line with the possibilities of the school. In today’s education, it is necessary to use technology to keep up with the rapidly changing world.”

Seven teachers stated their expectations from the school management during the technology integration. It is seen that the most stated expectation is “support for class participation”, followed by “understanding and flexibility”, “technical support”, and “increased communication”. Below are some teacher statements that indicate expectations.

“I expect the school administration to be understanding towards the problems we are experiencing, and to help with technical issues.”

“They can provide material, computer and internet support.”

“Being flexible while preparing the course schedules and supporting the teachers in dealing with those students who cannot attend the lesson.”

The second theme was about “artificial intelligence”. While 10 out of 15 teachers thought that their school principals had knowledge about artificial intelligence, the others said they were not sure or had no knowledge about this concern. They also believe that although school principals know the concept and technology of artificial intelligence, they do not sufficiently encourage teachers and students in this field. Representative opinions of teachers who think that the school principal has related knowledge:

“Our manager is interested and knowledgeable about artificial intelligence. He supports our students to do coding and algorithm-based activities in our classroom. In this way, children learn computer programming.”

“Yes, has knowledge about artificial intelligence. Information about this is shared between teachers and the administration.”

“May have individual knowledge about artificial intelligence. However, no events were held at the school because of the socio-economic situation of the region we are in.”

“Cloud computing” was the third theme of the findings. Only four teachers reported that their managers had knowledge about cloud computing. According to the teachers’ statements, it was seen that cloud technologies were not adequately understood by the teachers. In fact, more than half stated that they did not know about these technologies neither. This may be due to the new development of this field. Representative comments for this theme include:

“He has knowledge. He did distance education studies and held meetings on Zoom.”

“I do not think he has any knowledge. No event has been held on this topic and thus many of our teachers do not have knowledge about the subject.”

“I do not know what level of knowledge our manager has in cloud computing. I am not familiar with this concept. I guess it is about sharing documents via internet. We share documents via WhatsApp or e-mail.”

The fourth theme was related to “augmented reality” technologies. Almost half of the participating teachers (47%) reported that their school principals had knowledge about augmented reality. Some teachers think that whether school principals know about augmented reality or not, they make effort to encourage and support teachers to implement augmented reality applications to classroom teaching. Some comments related to this theme include:

“Our manager is knowledgeable about this technology. We showed our students the beauties of Turkey with PTT AR cards. He provided the cards. We also held an augmented reality event about the Turkish flag.”

“Our school principal supported our work on the Republic Day on October 29 with the Ouiver application. He supported our event by printing out 3D papers from the photocopier.”

“I had the opportunity to work with our new manager for only 3-4 months. Although I do not have much idea about what he knows and what he does not know, according to my general impressions, I think that he does not know about augmented reality.”

“Cyber security” was identified as the fifth theme of the findings. Most of the participants (73%) stated that their school managers cared about cyber security issues. Some believe that this concern has come to the fore especially in the last few years because the COVID-19 epidemic conditions and educational environments where technology and information networks gain more importance make it necessary to ensure the safety of students on the Internet.

“He is sensitive about online security and takes necessary precautions to protect the security of teacher and student information.”

“Our school principal pays attention to cyber security. He takes precautions in this regard, which I think affect the school and students positively.”

“Since the internet infrastructure in our school is provided by the ministry, I think the ministry has

already taken precautions regarding cyber security. Apart from this, our school principal also takes the necessary steps. For example, the security of the school website is the most important consideration for him.”

The final theme is about “3D printers”. According to the opinions of the more than half of the teachers (67%), school principals have knowledge about 3D printers. However, they have problems in integrating 3D printers into educational environments. They argue that the main reason for this situation is insufficient economic resources of the schools as these tools are relatively expensive. Some of them elaborated their opinions as follows:

“He has knowledge, but there is no 3D printer in our school...it is expensive and we do not enough budget to afford it.”

“Yes, he knows 3D printers. There has been no activity including 3D printing.”

“I think he knows it, however, due to financial difficulties, there was no 3D Printer in our school, so there was no activity related to this.”

Conclusion

On the whole, the findings show that teachers mostly have positive thoughts about the use of technological innovations by school principals. Teachers with positive thoughts think that school principals mainly use technology at a medium level. As can be seen from the answers given by the teachers, school managers may not be able to implement some technologies (e.g., artificial intelligence, augmented reality, 3D printers) into schools and thus may not carry out related educational activities whether they are knowledgeable or not. The possible reasons for this may be the new development stages of those technologies, their high cost, or the lack of sufficient competent person in the school. Considering the fact that these are up-to-date technologies and one of the tools that can be used the most in education, introducing and using them can be seen as an important competency to be improved. Therefore, these technologies and how they are used in instructional processes can be given more space in both pre-service and in-service teacher training.

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Journalism Students Attitudes towards Online Learning During COVID-19 Pandemic

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Abstract: One of the global challenges that the COVID-19 pandemic has posed, is the transition to an online learning format. The goal of this research is to show the results of study, how effective online learning was during the corona pandemics. The research was conducted in 8 Journalism schools of Georgian Universities and on the whole, 174 students participated. This representative study included 3 state and 5 private universities and quota selection was carried out - 22 students participated from each university. This survey was conducted using Google forms from 20 August 2021 till 20 December 2021. The main research questions were: how effective is online learning? what are the advantages and the disadvantages of full online learning? And would you like to use online learning after the end of pandemic? As the research revealed, a large number of students negatively evaluate online learning, especially in practical journalism courses, and prefer face-to-face learning.

Keywords: Online Learning, Higher Journalism Education, Georgia, COVID-19 Pandemic, Students Attitudes

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Introduction

The modern higher media education is hard to imagine without the use of digital technologies, but in the conditions of COVID-19 pandemics, a number of challenges have been posed due to the transition to completely remote format. In the early stages of the pandemics, from March 2020, when universities were closed around the world, the only solution to not interrupting the learning processes was to introduce full distance learning. “The physical closure of universities and university colleges due to COVID-19 has accelerated the digitalization of journalism teaching to a record speed” (Olsen et. al, 2022). COVID-19 pandemic accelerated the adaptation of E-learning tools fully, students as well as journalism educators adopted a ‘new normal pedagogy’ of learning (Matsilele, 2020; Misimanga et al. 2022, Osepashvili, 2022).

The new reality for “new normal pedagogy” brought new innovative ways and methods. The main educational innovations Zoom, Google Meet and other platforms were adopted during the learning processes. “Living in a box” (Fowler-Watt, K. et. all, 2020), it can be said to be a metaphor to describe online learning processes during

the lockdown, as well as the term “Zoomification”. It has positive and negative sides as well as during the journalism higher education.

The goal of this research is to show the results of study, how effective online learning was during the corona pandemics from students’ perspective.

Literature Review

There are a few numbers of studies about students’ perceptions towards online learning during the COVID-19 pandemics. Most of them analyzed students both attitudes positive and negative sides of this processes. Mathew and Chung in their study about University Students’ Perspectives on Open and Distance Learning (ODL) Implementation Amidst COVID-19 (Mathew & Chung, 2022), conclude that university students have shown positive feelings about the overall implementation of online learning and emphasized the contributing factors – using of distance learning platforms and the asynchronous methods, which allowed students to replay the lessons at any other time needed.

Sudiapermana also emphasized his study that, the implementation of distance learning in this pandemic era has a positive value. “Online learning is actually a major breakthrough in the digital era and will become a post-pandemic new normal necessity” (Sudiapermana, 2020). In the comparative study which was conducted in 3 Countries (Spain, Italy and Ecuador), were analyzed journalism and communication teachers and students’ perspectives how effective using of open innovations during pandemic learning was (Tejedor, at. all, 2021).

Koet & Aziz in systematic literature review analyzed students and teachers’ perception towards distance learning during the pandemic and their perspectives were discussed from the positive and negative views about distance learning during the COVID-19 pandemic. As they concluded, “Recurring themes identified in the studies showed results of having varied perspectives towards distance learning due to various factors such as social, technological, and pedagogical factors.” (Koet & Aziz, 2021).

Nyarko and Serwormoo described their study reflections of media students and lecturers about challenges and opportunities (Nyarko & Serwormoo, 2022). Indonesian researchers pointed out main positive values for journalism teachers and students from various regions that they can join classes “without having to worry about the distance” (Mustika & Khotimah, 2020). Unger and Meiran in their case study of Wingate university (North Carolina, USA), analyzed undergraduate student attitudes towards rapidly shifting to an entirely online learning environment which was caused by to COVID-19. “In addition, surveys on perceptions about misinformation in media, overall anxiety towards distance learning, knowledge of disease outbreak, and level of preparedness during the onset of the Coronavirus (COVID-19) 2020 outbreak were analyzed” (Unger & Meiran, 2020).

Snoussi and Radwan revealed many perceived positive and negative sides related to distance e-learning experience during the pandemic-2019 in the College of Communication; “advantages lie in enhancing students’

communication skills, saving teaching and learning in times of crisis and effective usage of multimedia as educational tools. The limits are mainly related to technical issues and computer proficiency as well as the absence of training in practical courses' (Snoussi and Radwan, 2020).

As another study suggests, "distance (online) education is not a full-fledged alternative to the traditional full-time education of journalists" (Poluekhtova at. 2020). According to the conclusion of the study "Implications for the use of Distance Online Learning in Colleges of Media and Communication: survey results", it must be emphasized that the transformation imposed by the global COVID-19 pandemic, "has affected the learning process and led to an irreversible development in the education system. It seems that blended learning will become popular all over the world in the coming years considering the effects that have taken place in terms of curricula as well as a new teaching, learning, and assessment methods that suit the online environment" (Al-Mutairi et. al. 2021).

It should be noted that distance learning was not new for some countries. The hybrid model of e-learning was implemented years ago before the pandemics. Consequently, adapting to new learning platforms during the lockdown was less of a challenge for them. Before the COVID-19 pandemics, in Georgia distance learning had never been implemented due to lack of the legislation. The only experience was using of MOODLE platform for some journalism courses in Tbilisi State University and International Black Sea University. There is study which explored journalism students' and teachers' attitudes to using of Moodle platform for blended learning (Osepashvili, 2011).

In another study Georgian students' attitudes towards using Moodle and Social media usage in higher journalism education were compared (Osepashvili, 2014). The previous qualitative research "Journalism teaching practice during the COVID-19 pandemics", which were conducted in this issue in Georgia only analyzed the teachers' attitudes (Osepashvili, 2022). Until now, no one has studied and analyzed the strengths and weaknesses of pandemic learning among the Georgian journalism students. This is the first research in Georgia which studied students' attitudes towards online learning during the COVID-19 pandemics time and this is a novelty of this study.

Method

The research was conducted in 8 Journalism schools of Georgian Universities and on the whole 174 students participated. This representative study included 3 state and 5 private universities and quota selection was carried out - 22 students participated from each university. This survey was conducted by using Google Forms for an electronic questionnaire. The links of this questionnaire were emailed to selected students.

Table 1.

#	Universities:	Types:
1	IBSU/International Black Sea University	Private University
2	TSU/ Ivane Javakhishvili Tbilisi State University	State University
3	GRUNI/ Grigol Robakidze University	Private University
4	ATSU/ Kutaisi Akaki Tsereteli University	State University
5	Georgian Technical University	State University
6	Caucasian International University	Private University
7	SEU/Georgian National University	Private University
8	SDASU/David Aghmashenebeli University	Private University

This survey was conducted using Google forms from 20 August 2021 till 20 December 2021. The main research questions were:

RQ1. How effective is online learning?

RQ 2. What are the advantages and disadvantages of full online learning?

RQ 3. And would you like to use online learning after the end of pandemic?

Findings and Discussion

Respondents' profile: 72 percent (n=125) of questioned journalist students were female and 28 percent (n=49) were men.

Table 2. Gender of Respondents

Gender	Percent	Number
Female	72 %	125
Male	28 %	49

Which platforms did you use for online learning at your university?

174 responses

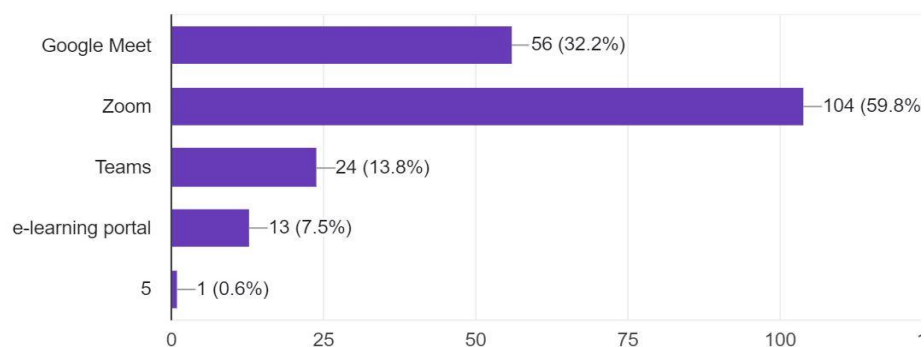


Figure 1. Using of Platforms

Most of the questioned students use Zoom and Google Meet platforms, which are more popular than other online applications.

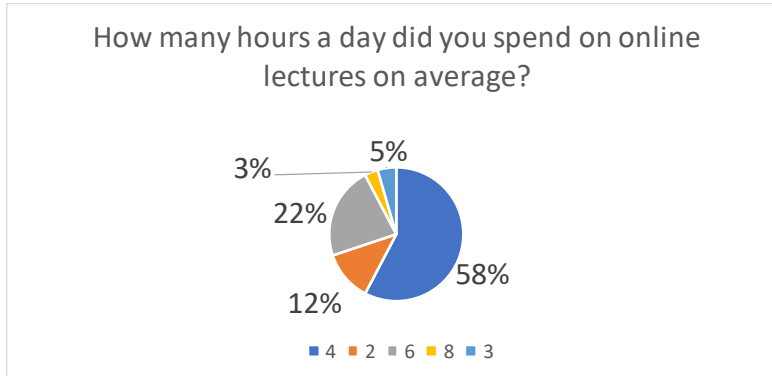


Figure 2. Frequency of Using E-Learning Platforms

In this questionnaire students were offered some advantages and disadvantages of distance learning via 5-point Likert scale.

Table 3. Advantages of Distance Learning

	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Mean
	1		2		3		4		5		
It's possible to join online classes from any place	94	54%	28	16.1%	17	9.8%	14	8%	21	12.1%	2.08
Online learning saves the time	72	41.4%	40	23%	26	14.9%	17	9.8%	19	10.9%	2.22
In parallel with the work, we were engaged in the online classes	63	36.2%	16	9.2%	24	13.8%	17	9.8%	54	31%	2.9
We can view recorded lectures any time	139	80%	26	15%	9	5%					4.3

As revealed by this research, most of the questioned students agree with the statement about advantages of distance learning, that it gives possibility of joining online classes form any place (54% strongly agreed; 16% agreed) only small number of students disagreed or strongly disagreed;

Most of the students agreed that online learning saves the time (41.4% strongly agreed 23% agreed); 36% of student-journalists strongly agreed and 9% agreed that it gives possibility of being engaged in the online lectures in parallel with their work, 10% disagreed and 31% disagreed with it.

Majority of students agreed that online learning gives them possibility of viewing recorded lectures any time (80% strongly agreed, 15 % agreed).

As for on the open-ended question, what the advantages of online learning are, they pointed out, that it is more flexible, it is important in terms of time management and self-management.

“It’s very flexible, you can save the time.”

“Fully remote learning helps us to improve time management skills.”

“The only positive side is that we are less at risk of getting infected with COVID-19 because online lectures are safe, although this is not a guarantee of avoiding infection.”

They also save money because they don’t need to use transport; They emphasized that they could view the recording of the lectures at any time, which is the main plus to mastered the use of online platforms more fully.

“I did not spend money and time on transport and this is a very significant factor for me, it helps us save money and reduce costs.”

“The lecture is recorded and you can always listen to the topic which was unclear.”

“First, it allows to manage time better. Also, we are fully engrossed in the full use of online learning platforms.”

“As for advantages, in addition I would like to mention the use of smartphones in the learning process. We often have to take a TV story or photo with these tools in practical journalism courses.”

In the open-ended question another advantage of distance learning for students was also revealed, that their professors often had a chance to invite a guest speaker during the online lectures. This rarely happened while the face-to-face classes.

Table 4. Disadvantages of Distance Learning

	Strongly Agree 1		Agree 2		Neutral 3		Disagree 4		Strongly Disagree 5		Mean
Sometimes there are some technical problems	61	35.1%	60	34.5%	29	16.7%	16	9.2%	8	4.6%	2.13
Sometimes it’s boring and exhausting	62	35.6%	38	21.8%	44	25.3%	15	8.6%	15	8.6%	2.32
Studying journalism practical courses are not effective	101	58%	33	19%	15	8.6%	10	5.7%	15	8.6%	1.87
It’s difficult to concentrate fully	62	35.6%	49	28.2%	28	13.2%	19	10.9%	21	12.1%	2.44
It’s less interactive	73	42%	32	18.4%	38	21.8%	12	6.9%	19	10.9%	1.84

This table shows the challenges of distance learning from students’ perspectives. Most of the questioned respondents agreed about some technical problems (35% strongly agreed, 34.5% agreed);

35.6% of students strongly agreed and 21.8% agreed that full distance learning is sometimes boring and exhausting. Majority of students agreed that studying journalism practical courses are not effective 58% strongly agreed and 19 % agreed. Most of the students agreed, that it's difficult to concentrate fully during the online lectures or seminars - 36% strongly agreed, 28% agreed with this.

Also, most of the questioned students agreed with that, it's a less interactive process - 42% strongly agreed and 18.4% agreed with this statement. As for the open-ended question, what the disadvantages of online learning are, the students pointed out, that it is the lack of social communication.

"Making new friends in this mode is very difficult, in fact, impossible. Some people don't have the camera on, so I cannot see their faces and expressions. It all creates an emotionless environment, which is very uncomfortable..."

"There is no face-to-face communication, which leads to isolation, isolation from society..."

"It is especially negative for journalism major students, because unlike other majors, journalism cannot be studied online, let alone practical courses."

"We do not have the opportunity to interact with future colleagues, to have practical knowledge, to be highly social, to be engage in lively discussions, to have the honor of meeting lecturers personally. After all, very often there are technical interruptions, which makes it even more difficult to get a quality education. I want to feel like a student and I don't want to waste my resources."

Some of the questioned students emphasized the challenges of practical courses, like TV production or multimedia journalism. Learning processes these courses were difficult because they didn't have an opportunity to meet respondents and use TV cameras.

"Practice is something that is hard to get online. Conventionally, I had a subject where I had to edit a video in the program, which is very difficult to teach online to students. In addition, I had a problem with this practical subject, because I had to learn to work on a computer that should be powerful and stable. I didn't have one, the university didn't offer me either. Therefore, I didn't study a lot throughout the semester. I want to say that a teaching practical subject online is very difficult. At this time, it is even better to have a mentor close to you and who will give you instructions."

Some students also mentioned one more challenge, which it was difficult for them to meet with information sources and take interviews. They started using innovative ways – Zoom or Google Meet interviews – but this challenge has become a new opportunity and therefore a strength:

"At first, it was really difficult because we needed to meet the sources for the practical subject courses, but we could not because of the lockdown. Since we started recording interviews via Zoom, I like it so much, it would be good if we kept this form even after pandemic teaching."

The questionnaire was finished with one more Likert scale question whose aim was to evaluate how effective online learning process was on the whole.

Table 5. Effectiveness of Online Learning

	Strongly Agree 1		Agree 2		Neutral 3		Disagree 4		Strongly Disagree 5		Mean
On the whole, online learning is effective	10	5.7%	21	12.2%	46	26.4%	51	29.3%	46	26.4%	3.6

Majority of the questioned students disagreed with statement that on the whole online learning was effective. 29% disagreed and 26% strongly disagreed it. Only small number of respondents agreed about the effectiveness of remote learning process (6% strongly agreed and 12 % agreed).

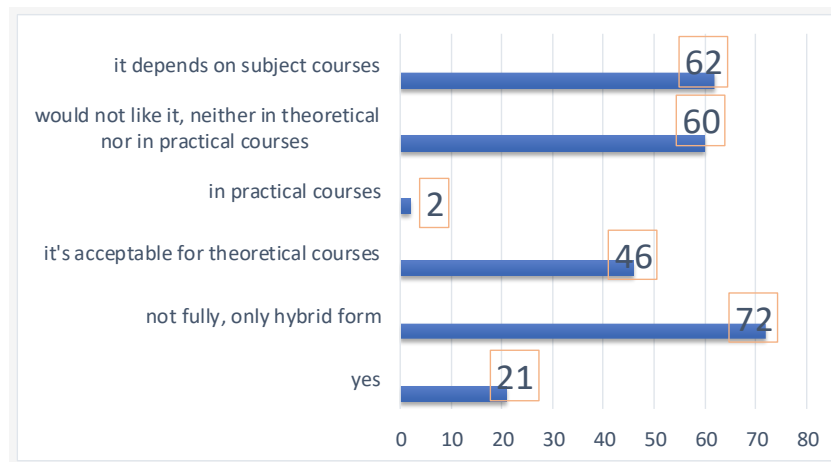


Figure 3. Would You Like to Use Distance Learning After the Pandemics

According to the results of this last question, after pandemic only 12 percent (n=21) of journalism students would like to use remote learning;

- 35% think that it depends on subject courses;
- 41% think that it would be great if learning process was a hybrid form;
- 26% think that online learning is acceptable for theoretical courses.
- 2% think that online learning is acceptable in practical journalism courses.
- 34% believe that they would like it neither in theoretical nor practical courses.

Conclusion

According to the results of this study, it should be concluded that for most of the Georgian journalism students fully remote learning was the only alternative during the COVID-19 pandemics. It was a solution to this global

challenge, which COVID-19 posed in educational sector, in order to cope with these difficulties in the “new normality”. If we compare the results of previous study which was conducted among Georgian journalism teachers (Osepashvili, 2022), the same was emphasized in students’ attitudes too, that it was a teaching during crisis time.

If we compare the results of this research with other studies which were conducted years ago among Georgian students (Osepashvili, 2011; Osepashvili, 2014) about using blended e-learning methods based on MOODLE platform in higher journalism education, the same was revealed during the pandemics, that “modern media education cannot be imagined without technologies and without e-learning methods” (Osepashvili, 2011) and blended learning is very important in teaching journalism subject courses. According to the results of this study, majority of questioned students disagreed with the statement that on the whole online learning was effective. 29% disagreed and 26% strongly disagreed with it. Only small number of respondents agreed that remote learning process effective (6% strongly agreed and 12 % agreed).

In the first research questions the strengths and advantages of distance learning were analyzed. It gives them opportunity to stay safely at home or at work and due to flexibility of this process, join the synchronized lectures from any place; listen to recorded lectures any time; save the money and time; improve the time management and self-management skills.

In the second research questions disadvantages of distance learning were analyzed that it is less interactive, sometimes it is related to technical problems with internet connection; there is less social communication; it is difficult to learn journalism practical subject courses fully online.

In the third research questions were revealed that after the COVID-19 pandemics only 12% would like to use remote learning and 41% of questioned students think it would be great if hybrid model was implemented after the end of pandemics but only for some theoretical subject courses because practice-based courses like TV or Multimedia production is unimaginable to teach effectively in case of remote classes.

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The Impact of the “Third Mission” of Universities and Research Institutions on Physics Education in Secondary Schools

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Abstract: Because of the increasing importance of the so called “third mission”, the number of activities toward the public, conducted at various scales by individual scientists, research institutions and universities, is steadily increasing. Educational programs developed by universities and research institutions for secondary schools have also been promoted. This contribution examines the opportunities and challenges that the interaction with research environments is having on physics education in secondary schools, starting from the interactions that the Physics department of University of Calabria has established with schools through extracurricular programs and citizen science projects, often combined with work-based learning programs, recently introduced in Italian schools by the recent reform of secondary education.

Keywords: Physics Education, Science Education, Public Outreach, Public Engagement

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Introduction

Historically, scientific communities did not consider public communication their own responsibility, valuing research productivity overall, so that participation in other types of activities was even discouraged and

disapproved of. The so-called “Sagan Effect” was named to indicate the loss of respect and reputation experienced by scientists involved in public communication, after the denial to Carl Sagan of membership at the National Academy of Science in 1992 [1-4]. This was accompanied by a widespread negative opinion of the public, who were considered to be lacking knowledge. Based on this knowledge-deficit model [5], early forms of communication with the public were thus didactic, in a one-way flow, assuming that a mere knowledge transfer process would increase public support for science. Only a few scientists were involved, generally the senior and prominent ones, who usually took part in one-time-only events, such as a public talk, newspaper interview, or guest appearance on a TV program. What has changed in almost three decades?

In these last years, the so-called “third mission” is becoming increasingly important in the activities of research institutions and universities [1-9]. Scientific and academic institutions today provide support, funds and staff that can help researchers in their communication with the public and the number of activities carried out at various scales by individual scientists, research institutes and universities is steadily increasing.

These interactions between schools and universities have been established through a variety of activities, most of which constitute short experiences like seminars, guest speakers and other one-day events. More recently, the interaction has been brought to a higher level by specific policy interventions. For example, in Italy schools can include after-school programs, up to 15% of normal school hours, which favors the development of extracurricular programs. An interesting intervention is related to work-place experiences, which have become compulsory in the last three years of the secondary education cycle in Italy. They are integrated with school learning, aiming to combine (formal) school education with real-life non-formal learning experiences [6-8], through the collaboration of schools with organizations, such as enterprises or universities. The integration of these informal activities into the school curriculum allows for a more sustained interaction between school and university and provide opportunities for structural and long-term connection between the world of scientific and academic research and schools. This structural connection also fosters a broader involvement of researchers and provides opportunities of active learning for students and of professional growth for their teachers. In this paper we will try to examine some of the opportunities and challenges that the interaction with research environments is having on physics education in secondary schools.

Examples of Interaction between Schools and Universities

In recent years, educational and outreach activities towards schools have been developed through informal teaching programs integrated with school programs and schedules. In our departments we have developed programs in collaboration with schools and non-formal education operators, such as the planetariums of the town of Cosenza [6-9]. Extracurricular programs can provide a wide variety of activities and generally operate during the hours immediately following the school day, but also include activities on weekends or during the summer. They have the great advantage of being freely chosen and can have open curricula, which can align with the learner's interests in a participatory and collaborative context [9]. These programs provide the opportunity to connect scientific research, education and science communication. Some activities are carried out

in university laboratories (fig.1). We think that regularly attending a university environment during the school period can help students to cope with the transition to the next levels of education.

As above mentioned, the mechanism of integration of the informal activities is favored by flexibility in schedule of formal schools and by specific policy interventions. This makes possible a long-term and structural collaboration between schools, university departments and non-formal education operators, in the development of extracurricular programs, with the aim of creating innovations and introducing new topics, such as the Course of "Physics and Materials Science Technologies" which is currently being developed in some schools in Italy [9], to introducing topics in nanotechnology and materials science. This program is mainly based on laboratory activities, developed in close collaboration between university researchers and teachers. This is a non-formal initiative, which is freely chosen by students and has an open curriculum, able to better respond to the interests of students and teachers. The goal is to increase students' attitude towards nanoscience in an interactive and stimulating learning environment. In this environment, researchers from university bring current scientific issues into the school alongside with their experience with the practice of the scientific method.



Figure 1. School Pupils at the Didactic Lab of the Physics Department of University of Calabria during on
Extracurricular Activity

Another important innovation of these last years has been citizen science [10-12]. Citizen science projects entail the participation of non-experts in real scientific research projects alongside professional researchers, underlining the inclusion of the public in the process of producing scientific knowledge. There are many citizen science projects often organized and coordinated nationally and internationally in many fields of research, ranging from astrophysics to marine biology and to environmental monitoring [11]. These projects entail different levels of participant involvement [11], ranging from the basic level of volunteering, with minimal cognitive involvement, to a high degree of engagement and peer-to-peer interaction between participants and professional researchers. While the literature on citizen science focuses mainly on the involvement of adult

volunteers, a growing number of studies highlight how participation in real research activities through involvement in citizen science projects has interesting educational benefits for school pupils [12]. Educational citizen science projects constitute a particular category of the more general definition of citizen science. Citizen science in schools is seen as a way to expose pupils to all stages of scientific inquiry, not only to simple laboratory work or data collection, but also as a way to consolidate knowledge of scientific methodologies by of students and teachers, as well as obviously improving the level of students in scientific disciplines.

For example, RadioLab is a project of the National Institute of Nuclear Physics (INFN) on environmental monitoring of natural radioactivity (<https://web.infn.it/RadioLAB/>). The project involves the combination of a real research activity, strictly connected to the themes of the physics curriculum at school, with important problems of social relevance. In Italy, extra-curricular educational programs, participation in citizen science projects can also become part of the (formal) school curriculum as a work-place experience [6-8].

These activities and programs allow and support opportunities for more sustained and deeper interactions than most of the current ones between research scientists and the public, especially in schools. These interactions can be further strengthened by institutional collaborations of universities and research institutions with science communication centers and schools. For example, the inclusion of PhD students from the local universities into the staff of a museum can favor involvement of young researchers (see fig.2) [8], simultaneously providing them with the opportunity for the specific training needed to improve communication abilities, which is still largely inadequate within the current graduate programs in higher education. Young researchers practice outreach less than senior scientists [1], but there is evidence [8,13] that these programs are much more successful when young graduate students and postdocs are actively involved. Participation also enhances the education of scientists and helps them to develop skills and capacities useful for both academic and non-academic careers.



Figure 2. A Ph.D. Students and (one of the author, G. Prete) of the Physics Department Performing an Activity with Students at the Planetarium of Cosenza [ref]

Opportunities and Challenges for Science Education in Schools

The approach we followed in developing these extracurricular activities integrated into the formal curriculum is based on peer-to-peer interaction of researchers, teachers and students. The university researcher is asked to put his / her experience in the practice of research and experimental method at the service of students, stimulating their personal initiative and encouraging them in their attempts. The approach favors the uptake of active learning techniques [14,15], putting the students at the center of a stimulating learning environment, that engage them in a creative activity aimed at building knowledge based on learning by doing. In this environment, schoolteachers have the peculiar role of placing the activity in the curricular didactic and pedagogical context. This has an impact on the ordinary activity of teachers in the classroom, which must be connected and oriented with the contents and practices of the extracurricular program. This represents an important redefinition of the work of teachers, called to integrate their teaching with real life experiences in which knowledge is built through inductive processes in active learning contexts, where the focus is on the interaction between the participants. In this sense, what is important in this learning environment are the dynamics of social interactions among all the participants. The assessment of the activity is also performed by observing, stimulating and evaluating the propositional and relational capacity of students, their degree of autonomy, awareness and responsibility, as well as their mental elasticity and creativity [6].

Obviously, there are difficulties to overcome. The participation of school pupils in real research activities is a demanding challenge. The participation of school pupils in educational projects of Citizen science needs to be carefully calibrated and focused, so that the level of activity results appropriate to the age and knowledge of the pupils, to avoid feelings of frustration and inadequacy towards science.

The interaction between schoolteachers and university researchers also requires a change of mentality on the part of both and some resistance is to be expected. Teachers are called to move from transmissive teaching methods to collaborative contexts that stimulate social and peer-to-peer interactions not only between students, but also between the other actors involved, including the teachers themselves and other figures such as operators' museums and professional researchers. Moreover, active learning methodologies are struggling to establish themselves in schools and universities [15].

Although scientists are committed and enthusiastic working toward high purposes and community building, it seems that their practices and attitudes toward public communication have not changed in these last 30 years. There is still a persistent negative perception of the public and of the media [16]. There is an active resistance to sharing power and control in the process of knowledge generation and diffusion [17], and scientists try to maintain control over the knowledge they provide, so they tend to act individually and through one-way communication [1]. Public communication activities are generally designed and performed individually by researchers, mostly senior, even in the institutions that provide support and have communication staff that are used by scientists only rarely and to obtain media attention. Moreover, likely because of their seniority, involved scientists mostly communicate through traditional means but are still largely absent from the internet and from

social media [1,16], being cautious about the capability of the media in dealing with scientific issues [16]. As a result, outreach programs with schools, seminars, public talks and debates, science cafés, fairs or festivals, march for sciences, etc., though appreciated by the public, are generally short-term experiences that often remain occasional and isolated events, which do not succeed in closing the gaps between scientific research and science education and communication.

Conclusions

In the last two decades, the interactions between secondary schools and university have taken a structural character. These interactions are developing through the integration of a whole range of extracurricular activities into the usual curricular activities, allowing and supporting opportunities for more sustained and deeper interactions than most traditional outreach programs, which often result in events of just one day. These activities integrate formal and informal education, resulting in a significant interaction of students and teachers with university environments. This type of integration, through activities co-designed with the active participation of teachers, brings together topics of current scientific relevance and social relevance with an approach intended to expose students and teachers to the practice of the scientific method, while remaining strictly connected to the school curriculum. In this way, current research topics, which are usually not dealt with, can be transferred to schools. Furthermore, through the integration of citizen science projects and other extracurricular programs, the approach can improve the uptake of active learning techniques, which are still poorly applied. In this sense, these activities can be useful for teachers to move from transmissive teaching models to active learning ones based on the interaction between all the participants. Finally, the activities are advantageous for the researchers involved, especially younger ones, who can improve their communication skills and acquire teaching and pedagogical skills.

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Examining University Students' Perceptions of Mercy and Compassion

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Abstract: The emergence of mercy on the earth is considered a different feature, as mercy provides the welfare of the vulnerable puppies in need of help; It is also a desired feature in spouse selection and assists in cooperative relationships with other individuals. Mercy makes the individual more acceptable in social life. The individual will nurture permanent relationships with compassionate people. As a matter of fact, this situation creates reliable behavioral patterns and mutually beneficial to increase cooperation between foreign people and individuals. Compromising compromise or troubles of offspring vulnerable is a desirable feature in partner selection and alliance processes. This research was carried out to determine university students' perception of compassion and compassion. This study was carried out with a semi-structured interview technique, one of the qualitative research methods. The entire working group consists of university students. It was realized with 58 people in total. It was done with 5 semi-structured open ended questions as data collection tool. In the analysis of the data, coding and categories are made. According to the results obtained, the university considers the concept of compassion and compassion for the students and is more of a human, religious and moral position.

Keywords: Compassion, Values, Kindness.

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Introduction

There are some values that make life beautiful. As the preservation of values promises, ignoring values poses problems related to the future of the individual and society, and what humanity focuses on is usually a glorified thought and concept. These are the values that the individual idealizes. Values are the attitudes accepted by the entire society that allow an individual to live in the society he is in, that enable his integration with other individuals, and that shape his behavior (Çiftçi, 2014).

Gibbs and Earley (1994) define the values of being brave, being loyal, being kind, being honest, respectful, being responsible, being fair, being compassionate and compassionate as universal basic values. The most

important issue for a teacher is how students handle values, how they make sense of them, and how they apply them in practice. The teacher needs to help the student develop these main values. Schools have a great duty to protect values. Many values have reached and survived to the present day thanks to educational institutions. Therefore, the transfer of values in schools is very important (Çiftçi, 2014).

Gibbs and Earley (1994) state that human life in general is guided by the individual's own internal values, and emphasize that the elements that have the most influence on the formation of these internal values are family, friends, religion, school and the media. Unfortunately, the public values that exist in a complex state cannot reveal a clear set of values for today's children of managers.

Compassion and Mercy

In the dictionary of the Turkish Language Institute (2019), compassion is a word of Arabic origin; It is referred to as affection. In the Nişanyan Etymology Dictionary (2019), compassion is defined as mercy, favoritism. In the dictionary of the Turkish Language Institute (2019), mercy, a word of Arabic origin, is defined as: "Sadness, pity felt because of the bad situation faced by a person or another living being".

When viewed from the framework of empathetic distress, the concept of compassion is a response to the suffering of other individuals and is a label against the distressing experiences of people that cause suffering. To express compassion, the underlying reason why it generates a behavioral response is most likely related to distress, pain, sadness, or fear (Hatfield, Cacioppo, & Rapson, 1993).

A feature is accepted as different to emerge in the world of mercy, indeed, mercy, helpless, defenseless puppy provides the convenience of welfare; it also helps in cooperation with other individuals and is a desired feature in mate selection. It is believed that compassion is formed in the form of an element of the protection system put forward to help vulnerable children in the claim of a child in need of help (Fehr and Russel, 1991). Compassion forms the emotional part of the care system. Compassion, rapprochement with other people; it is Decency that strengthens the bonds between them. The concept of compassion, which facilitates the development of long-term social ties, is soon associated with the acceptability of the individual to society. Compassion is largely linked to a secure attachment pattern that predicts parenting behaviors that allow children to be supervised in a healthier way (Shiota, Keltner, & John, 2006). The altruism of the compassionate individual and other social inclinations has developed cultural norms and values that reward and punish selfish individuals (Henrich, 2014). At the same time, if a compassionate person is guilty, feelings of revenge against him are not nurtured. Because compassion is a necessary condition for individuals to live together (Sarıçam and Biçer, 2015). Shaver, Schwartz, Kirson and O'connor (1987) stated that compassion is a reflection of sadness and love rather than a state of emotion of its own.

Compassion serves in the form of internal motivation and reward in terms of social solidarity (Gintis, 2003). Compassion makes an individual more acceptable in social life. The individual will nurture lasting relationships

with compassionate people. As a matter of fact, this situation allows increasing cooperation between strangers and people, creating reliable behavior patterns and mutually beneficial Decency. Compassion is a situation against reducing the troubles or problems of vulnerable offspring, it is a desirable feature in the selection of partners and alliance-building processes.

Compassion also forms cooperative relationships with other people. Compassion responds quickly and appropriately to pain. Compassion is the relief of the pain that exists. Compassion includes experimental and physiological processes that enable the emergence of appropriate behavior (Goetz, Keltner Simon-Thomas, 2010). Your compassion is limited to biological, social, environmental and cultural elements. Despite this, it is the key point for the formation of love. It has more altruistic behaviors rather than instinctual or habitual behaviors. Compassion is doing what is needed (Neff and Karney, 2008).

The individual nurtures compassionate love for his family, friends and environment, in short, the behavior he shows to all people. Compassionate love is an attitude that a person develops in order to be close to other people, strangers, that is, to all humanity. In particular, it should include feelings and behaviors such as being sensitive to other people when other people are distressed, suffering, being aware of them; caring, worrying, supporting, helping, educating and understanding. Compassionate love is different from empathy. Because empathy is more inclusive if it is compassionate love for sharing someone else's distress, because compassion, unlike empathy, has a behavioral tendency such as altruism. Compassionate love being close to other individuals is a powerful reason to help them (Sprecher and Fehr, 2005). In the light of the literature described in this study, answers to the following questions were sought:

- 1) What comes to mind when you say the concept of compassion?
- 2) I take care to be compassionate when someone in need asks for help. Compassion for me.....
- 3) I always have/do not have the compassionate attitude. Because;....
- 4) I am merciful to everyone/I am not merciful. Because;....
- 5) Do you see yourself as compassionate or compassionate in everyday life? Can you explain a little?

Method

The design of the research: This research was prepared with semi-structured interview technique, one of the qualitative research methods.

Study Group: The study group of the research consists of a total of 58 people (40=women, 17:=men). Of the participants selected for the purpose, 31 are undergraduate, 12 are graduate, 13 are associate and 1 is a doctoral student. Undergraduate and above educated respondents and 25% of PDR, Department of Turkish education 8, 8. Department of Science and Technology Education, Child Development, 3, 2% Informatics, social studies 3, 4, fashion and textile, all of them are studying in the 4 first aid and emergency departments. The average age of the

participants was determined as 24.7.

Data Collection Tools: The data of the research were obtained from 5 open-ended question statements created by the researchers and with the support of subject area experts. Due to the pandemic process occurring in Turkey and all over the world, the data were collected via Google form, not face-to-face.

Data Analysis: The data collected via Google form were examined in two parts as personal and research questions. The section related to personal data was included in the working group. The data of the open-ended questions obtained from the semi-structured interview form of the research were coded under each subproblem table and given. At the bottom of the tables, some raw data of the participants are given in italics. The interview data given in the tables are close to each other, the sentences have been tried to be collected under a single heading. Since the participants gave multiple answers in the analysis of the data, the cumulative total and percentage values exceed one hundred percent.

Results

In this part of the study, the data obtained from the participants are given in tables.

Table 1: The Results of the Analysis of the "Perceptions" Related to the Concept of Compassion

Mercy	f	%
Feeling	20	20
Love to love	16	16
Human	15	15
Kindness	19	19
Help	10	10
Conscience	10	10
Empathy	10	10

When Table 1 is examined, it is seen that a significant part of the participants in the study group perceive the concept of compassion as pity (20%) and compassion (19%). It is also seen that they perceive the concepts of love, help, conscience and empathy with the concept of compassion.

Table 2. Analysis Results on Whether Someone in Need Pays Attention to Act Compassionately When Asking for Help

Categories	Subcategory	f	%
	It is a unique thing		
	It is Compassion		
	Inability.	20	14
	Sad		
	It is a Sacrifice		
Faith	It is a reflection of my faith		

Categories	Subcategory	f	%
	A one-time action that I have to do to the person who realizes his weakness and asks for help.		
	It is faith, the building block for a just life and order on Earth.	38	24
	Circumcision is for you.		
	It is from faith, let us be merciful so that Allah will have mercy on us.		
Personality trait	It is one of the greatest human values that makes me who I am.		
	It is a feeling that overlaps with my personality that makes me feel good		
	It comes at the beginning of the characteristics that make a person human.	10	7
	It is enough for people to smile sincerely and sincerely.		
	It is my most important feature that makes me who I am.		
Human Value	It is a human value.		
	Who completes my humanity		
	It is a fundamental feeling for people to be able to live together Decently.	32	22
	It is a proof that I am human.		
	It is a human necessity.		
Help	Another name for goodness.		
	It is a fundamental feeling for people to be able to live together Decently.		
	It is to help an individual in need without waiting for a response.	35	23
	When someone extends a hand, it means being able to hold that hand and help him get up		

When Table 2 is examined, it is seen that there are proportions of those who consider the question of whether to have mercy on a needy individual as a belief (24%). In addition, it has been observed that they have an approach with the aim of human values and helping. The proportion of those who say that goodness is another name (23%) is seen as the proportion of those who say that it is a human value (22%).

Table 3. Analysis Results on Whether He Always Has a Compassionate Attitude

Attitude	Opinions with interest with an attitude of compassion	f	%
Yes	I have it because I think it's necessary to help those who need it.		
	I have, because while you live a life without mercy, you cannot dream of a just world.		
	I have it, because showing compassion is a feeling that heals me not only for the person I show it to, but also for myself.		
	I own it, because I put myself in the place of the other person.		
	I have it because the values I believe in require it. At the same time, helping someone in need is a source of happiness for me.		
	I have, because the teachings we have acquired in our culture, the inheritance we received from our family, have made it a way of life for me		
	I think I'm being merciful because I'm someone who can't even kill a bug in	45	80

Attitude	Opinions with interest with an attitude of compassion	f	%
	the house. I think I'm with. Because I think that not everyone lives in the same conditions in this life. That's why I think the conditions should be facilitated I have. Because I can't think maliciously about people. I can't establish a relationship of interest. I can't react the same way when someone does evil in front of me. More like this, I'm happy. I have it all the time because I really like to help people with everything there is an emotional production. I have it because I accept the understanding that please be merciful so that you will be merciful. I'm trying to have it, because mercy doesn't get me anything..		
No	Some people become colonialists in order to receive mercy I'm not, because people who constantly ask for mercy are malicious. I don't always have it, sometimes my anger outweighs it.....	11	20

When Table 3 was examined, eighty percent answered yes to the question of do you always act mercifully. Yes, most of those who answered stated that the reason for this situation was to be fair, to help, for personality traits and for religious reasons. Those who answered no said it was because of the negativity of past lives and the angry personality trait.

Table 4. The Results of the Analysis of Opinions with Whether He Behaves Compassionately Towards Everyone

Attitude	Opinions With Interest With An Attitude of Compassion	f	%
Yes	I'm merciful. Because everyone experiences different difficulties... I'm compassionate because I think it's a basic feeling that comes from the inside I am merciful because doing good and protecting me can also heal the other side You are merciful to everyone, because every living being that breathes needs mercy I'm merciful. Because we are one with everyone, I think it is necessary to be human I'm trying to be as much as I can because it feels good. I think I'm merciful. I am merciful because everyone needs it and we reap what we sow I'm merciful. Humanity is universal. I try to be compassionate towards everyone, because man is good at his core, and it is a human duty to help people who need help. I am merciful to everyone who has good intentions. Every living being deserves mercy People need compassion.	33	60
No	Some people don't deserve mercy I am not compassionate; I do not think that people who act contrary to values, such as abusers, treason, deserve this feeling. I'm not merciful to everyone. Because I don't think the people who want my evil deserve my mercy I'm not merciful to everyone. Because I don't make an effort to have a positive or negative feeling towards people who are not good in my opinion I'm not, because compassion is a feeling shown to people who deserve it. I can't have mercy on a murderer or, for example, someone who has done an injustice. I'm not compassionate because some people can hurt us by abusing the compassion we show, I'm trying to be compassionate to those who deserve it	24	40

When Table 4 was examined, 60 percent of the participants answered yes and 40 percent answered no when asked if they were compassionate towards everyone. Those who answered yes were more associated with an inner feeling, past lives, universal moral principles and belief system. Those who answered no stated that it was due to past negative experiences, religious reasons and personal characteristics.

Table 5. Use of Merciful or Compassionate in Everyday Life

Attitude	Views with Interest With an Attitude of Compassion and Compassion	f	%
Merciful	<p>I see mercy because I think that it is a feeling that comes from the inside and that it is my duty as a human being</p> <p>Merciful. Compassion is more possessive, it may be because compassion is more emotion-oriented and objective, while it is more like a person-based emotion than an event.</p> <p>I see it as merciful. Even if I am very angry, I don't stand on it too much because of a characteristic of the person in front of me. I'll close the topic. Or when I see someone who needs help, I can't be comfortable without helping.</p> <p>merciful. it seems to contain a little love in compassion. however, compassion is like the urge to do good. we call it maternal affection, it is unrequited, pure and contains emotionality. yet from feelings of compassion to compassion</p> <p>Let's call it merciful. Because the two are very other worlds. In line with my religious beliefs, ban makes me feel that compassion is more superficial, that compassion comes from my heart from my diary.</p> <p>In everyday life, I consider myself compassionate. The point is that compassion means not harboring bad intentions for people. But when I say compassion, it means being affectionate with people with a constant smile. I can't laugh at people all the time, I can't be compassionate to every person. But I have a lot of compassion.</p> <p>I see it as merciful. Because being compassionate only feels like loving, but being compassionate is both loving and helping people</p> <p>I see myself as compassionate because I am an emotional person and my sense of compassion never gets in the way of anything because I always empathize.</p> <p>I see it as merciful. Because there is a feeling of pity in compassion. It's not a bad feeling of pity, it's a human feeling of pity.</p> <p>I can be merciful. Because while there are so many negative emotions, this emotion, which is beneficial to human health, strengthens relationships.</p>	23	40
Loving	<p>Loving. When I try to empathize, compassion becomes more.</p> <p>I see it as compassionate. Compassion is a more human and unrequited feeling of love and protection than compassion. More sublime.</p> <p>I see myself as compassionate, I have unconditional love for everyone, and I especially feel a person as a dramatic being, even a bitter facial expression of a person can be enough to make me cry suddenly</p> <p>I'm compassionate. The fact that the love in me depends on the other side makes me manipulative. In such a situation, an action I show for the other party will not be a reflection of my self.</p> <p>I see it as compassionate. When I see the wounds and sorrows of people or creatures, I try very hard to heal them.</p> <p>I'm compassionate. I tremble over what is in front of me, I try to meet every need, but I expect the same</p> <p>Caring because I am a mother</p>	17	30

Attitude	Views with Interest With an Attitude of Compassion and Compassion	f	%
	I feel compassionate because I have a maternal structure		
Having both concepts	<p>It is very difficult for him to separate compassion from compassion. I am trying to be compassionate to the point of being sensitive to everyone who is compassionate to mistakes.</p> <p>Compassion and compassion are close concepts. With the combination of the two, a real interest, love, understanding is born. I also feel these two together, at least partially.</p> <p>I think I carry both characteristics. It gives peace to keep my compassion and compassion alive so as not to be selfish and turn a blind eye to the realities of the world</p> <p>He is both merciful and compassionate, because it is good to live buddha with love, and for this, both compassion and compassion are necessary</p> <p>Instead, I have both of them, al-hamd. We should not forget that Allah commands us to do good and we should always pay attention to this situation as much as we can.</p> <p>Both compassionate and compassionate I am a preschool teacher, both a personal and professional trait.</p> <p>I think that both of them have the same feelings, as if there is no compassion for those who do not have compassion.</p> <p>I also see him as compassionate and compassionate. I think I have both. I love people, I love everyone, I can't stand anyone to be upset.</p> <p>Compassion and compassion are close concepts. With the combination of the two, a real interest, love, understanding is born. I also feel these two together, at least partially.</p>	17	30

Tablo5 examined yourself merciful or compassionate do you use in everyday life as merciful as 40 percent of respondents to the question of whether, as expressed both down and 30 percent 30 percent. Those who define themselves as merciful have claimed that they are sincere feelings, as well as grounds such as due to their religious beliefs. Those who define themselves as caring; empathy, because it is a feeling that is seen as unrequited, because it is due to feelings such as need and motherhood, offered reasons such as. Those who have both concepts together have stated that it should be so because they are very close concepts to each other and as a belief.

Discussion and Conclusion

In the studies carried out in the field of compassion and compassion, results have been obtained that it will be an important element in the regulation of emotions in the individual's life, related to his physical and psychological health. In this section, some research on the subject is given.

According to the results obtained in the research; a significant part of the participants in the study group perceive the concept of compassion as pity and compassion. Cohn et al. (2009) claim that positive emotions are positively related to people overcoming problems. Halifax (2011) states that love and compassion are one.

The proportions of those who see the question of whether to have mercy on a needy individual, which is another sub-problem, as a belief, are high. In addition, it has been observed that they have an approach with the aim of human values and helping. The data were obtained from the compassion questionnaire developed by the researcher. It was found that the value of compassion increased positively as a result of the activities carried out with the participants in the experimental group. These studies in the Science course have given the students a positive perspective towards the course. Another finding obtained in the research is that it has been proven that the feeling of compassion can be researched and developed in different fields besides Religious Culture and Moral Knowledge and Social Studies (Küçükaydin, 2015).

Eighty percent answered yes to the question of do you always act mercifully. In research, if self-compassion is high enough, it seems that a person is happy, optimistic, has a lot of internal motivation, and life satisfaction is high, and psychology is sound. When the literature is examined, it is not only looked at whether people have low or high self-compassion, it is also examined at which stage of their lives such people have less or more self-compassion. Although people's self-criticism increases during adolescence, being more idealistic causes them to behave cruelly towards themselves. Therefore, when the literature is examined, various studies are carried out in schools to increase the well-being of individuals in adolescence, and it is seen that good results have been obtained over time. A person with a lot of self-compassion is not easily affected by everyday life. At the same time, in some studies conducted at the university, it has been observed that self-compassion increases interpersonal harmony, protectiveness and Decency. And these studies have facilitated the individual's adaptation to life at the university and increased the individual's resistance such as coping with exam problems (Bayar, 2016; Erdoğan and Uslu, 2018). According to the results of the research conducted on employees, it is necessary to provide a compassionate environment for the continuous continuation of employees. The perception of organizational compassion does not change as men and women, but women's perception of compassion is higher. According to marital status, singles have a higher perception of compassion compared to married individuals. According to another result of the research, although there is no conclusion that the number of stars in hotels is compassion, there is a perception that there is more compassion in more luxurious hotels. While the perception of compassion is low in departments such as food and housekeeping, where working conditions are more severe, the perception of compassion is higher in departments such as accounting and human resources. As a result, it can be concluded that the excess of work leaves a negative impact on the perception of compassion. The increase in working hours leads to a decrease in the state of organizational compassion. When the perception of organizational Decency and the level of education are investigated, there is a remarkable difference between people who have completed at least higher education and people at high school level. This situation has shown that the state of compassion will increase as the level of education increases (Albayrak, 2016). According to the research results, the personal and familial characteristics of primary school students at the first stage of adolescence are most related to family satisfaction, and then to general life satisfaction, etc. it is seen as continuing. Life size; perceived parental attitudes, classroom success, perceived academic success were more connected than other variables (Çivitçi, 2009).

When asked if he was compassionate towards everyone, 60 percent of the participants answered yes and 40 percent answered no. In this study, which was conducted on 485 adolescent individuals about a high level of life satisfaction, students were divided into three groups. Students with a high level of life satisfaction tend to adapt with all dependent variables. Compared to students with average life satisfaction, students with high life satisfaction gave high scores on the measure of social stress, the measure of attitude towards teachers and all other criteria. In addition, none of the group of students with high life satisfaction showed their psychological symptoms at clinical levels, and 42% of the group of students with low satisfaction did not support clinical October symptoms. In the group with high life satisfaction, there are fewer interpersonal problems, more hopeful, and more personal control compared to students with low life Decency. These data have shown that high levels of life satisfaction and different positive behavioral and psychological adaptation are linked to each other. It reveals that the group with high life satisfaction has a higher school grade point average compared to the low one, and Decisively correlates positively with academic success, and there are important conceptual links between life satisfaction and school. This study reveals the situation in which life satisfaction affects interpersonal relationships and academic behaviors (Gilman and Huebner, 2006; Deniz et al., 2008).

In the question of whether you see yourself as compassionate or compassionate in everyday life, 40 percent of the participants expressed themselves as compassionate, 30 percent as compassionate, and 30 percent as both. Huebner (2004), in his published article, discusses the life satisfaction made for children and adolescents as a construct validity. Although life satisfaction is closely related to the individual's self-esteem, positive emotional state, and negative emotional state, it seems to be different from them. Although life satisfaction is associated with various well-being structures, it seems to be a separable psychological structure from them. In the study conducted by Park and his friends, it was shown that the life satisfaction of students is similar between Deculturalism. It provides a basis for the similarity between cultural groups in a meaningful international comparison of life satisfaction among children and Dec Decents (Park, Huebner, Laughlin, et al., 2004; Aydemir, 2018).

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Self-Assessment in Mathematics Learning among Chinese Secondary School Students: Do Girls Underestimate Themselves?

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Abstract: Mathematics learning plays a significant role for high school students. Although gender differences in mathematics learning have been well documented, gender differences in mathematics learning self-assessment have not been adequately studied. The purpose of this study was to investigate whether gender differences existed in the mathematics learning self-assessment process. In this study, nine Chinese high school students answered interview questions about self-assessment (Step 1: determine/set self-assessment criteria; Step 2: seek external and internal feedback; Step 3: reflect the learning process and product with the support of feedback) in mathematics learning. The findings revealed that all high school students self-assessed their mathematics learning. Gender differences varied across the self-assessment steps. In Step 1 and Step 2, it did not show significant gender differences. However, in Step 3, gender differences were significant. This study can help educators and researchers better understand the variability and complexity of self-assessment in mathematics learning.

Keywords: Mathematics Learning, Self-Assessment, Gender Difference, Secondary School

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Introduction

Mathematics is a cornerstone subject in STEM [science, mathematics, engineering, and technology] and an important pathway to adult life and career opportunities (Wheatley, 1992). For students, mathematics is an important part of the school curriculum (Leder, 2019). Based on the importance of mathematics learning, learning strategies for mathematics learning have also been paid close attention by researchers. Self-assessment is one such learning strategy that should not be overlooked.

Self-assessment is the foundation of self-regulation learning (Mendoza & Yan, 2021). It is an essential skill that students must have when learning (Yan et al., 2020). On one hand, it has been shown that by self-assessing their performance, students can identify their advantages and disadvantages and adjust their learning accordingly (Boud, 1995; Yan & Brown, 2017). On the other hand, self-assessment has beneficial impact on student's motivation to learn (Boud, 1995; Brown & Harris, 2013; McMillan & Hearn, 2008), and autonomy in learning (Brown & Harris, 2013; Paris, S. & Paris, A., 2001).

Since the mid-1970s, gender differences in mathematics learning have been a focus of attention for researchers concerned with mathematics and those concerned with gender (Fennema, 1974; Hyde et al., 1990; Inglis & Foster, 2018). Researchers have documented gender differences in mathematics learning and explored the positive and negative factors that are evident (Fennema, 1974). However, gender differences in the self-assessment process have not been fully explored. Do gender differences exist throughout the self-assessment process? At what steps of the self-assessment process do gender differences exist and at which steps do they not exist? To examine these questions in depth, this paper first provides a preliminary theoretical conceptualization of self-assessment. Then, the existence of gender differences in each step of self-assessment in mathematics learning is investigated from the students' perspective through a case study.

Mathematics Learning

The focus on STEM (science, technology, engineering, and mathematics) is escalating in many countries and its robust role in multiple sectors is formally recognized (Honey, Pearson, & Schweingruber, 2014; Marginson et al., 2013; Royal Society Science Policy Centre, 2014). As a result, developing competence in STEM disciplines is considered an urgent goal for many educational endeavors. Mathematics is the cornerstone discipline of STEM. Many mathematics teachers and researchers have observed that mathematics is unique in the school curriculum (Damarin, 2000). High school students as teenagers are at their most active thinking period. They will either step into the society or go deeper into higher education. It is necessary to guide them at this time stage to discover their interests and lay the foundation for their future studies and life. For some students, learning mathematics can be a struggle. Efforts should be made to motivate and inspire students to learn mathematics and guide student to see the practical applications of mathematics in the real world to better help them in their journey into society (Murphy, 2016). Therefore, high school students' mindset toward mathematics learning is a topic well worth studying.

Gender differences in mathematics learning have long been a topic of exploration for researchers (Leder, 2019). The stereotype is that boys are better at math than girls. However, the study found no significant difference between boys and girls in their ability to solve math problems during junior high school and elementary school. In high school and college, gender differences would be more in favor of males (Hyde et al., 1990). Therefore, it is necessary to study the issue of gender differences in mathematics learning among high school students.

Self-Assessment

Self-assessment not only facilitates professional development (Yan, Boud, & Powell, 2020), but also is a key to lifelong learning (Papanthymou & Darra, 2018; Siegesmund, 2017; Yan & Brown, 2017). Through self-assessment learners can motivate themselves and direct their efforts, keeping them abreast of new knowledge in their professional fields (Mok et al., 2006). Research has shown that self-assessment positively affects academic achievement, self-regulation, and motivation to learn (Brown & Harris, 2013; Panadero et al., 2017). In addition, self-assessment can increase students' commitment and autonomy to learning (Brown & Harris, 2013). There are also many studies that demonstrating the ability of self-assessment to promote academic achievement. McMillan and Hearn (2008) noted that because since self-assessment enables students to control their learning process and regulate assessment criteria, it tends to positively affect students' academic performance. Due to the positive impact of self-assessment, it is imperative that researchers have a further understanding of the self-assessment process. (Panadero, Brown, & Strijbos, 2016; Yan & Brown, 2017). So, what exactly is self-assessment?

Broadly speaking, self-assessment can be defined as students reflecting on the quality of their work, judging the extent to which it reflects explicit goals or standards, and modifying it accordingly (Andrade & Valcheva, 2009, p. 13). In many studies, self-assessment is viewed as a simple summative self-rating, but in real-world learning situations, self-assessment is clearly much more complex. A number of studies have pointed out that self-assessment is not a summative assessment, but a complex process (Mendoza & Yan 2021). Yan and Brown (2017) conceptualized self-assessment as a process through which students judge their performance based on feedback gathered from different sources (Boud, 1995; McMillan & Hearn, 2008; Yan & Brown, 2017). They proposed a "cyclical self-assessment process" that covers three sequential steps. The first step in student self-assessment is to determine self-assessment criteria. The second step is to seek feedback on one's performance from both external and internal sources. External feedback comes from explicit course requirement, others' evaluations of the student's learning, etc. Internal feedback comes from internally generated feelings about the performance of the student. The third step is to compare the feedback with their own self-assessment criteria and to reflect on the learning process and learning outcomes with the support of the feedback. This definition of self-assessment is well accepted and applied. Therefore, this definition was adopted to represent self-assessment behavior in this study.

The Case Study

To gain insight into gender differences in students' self-assessment of mathematics learning, a case study was conducted with Chinese high school students that followed Yan and Brown's (2020) self-assessment model (i.e. Step 1: determine/set self-assessment criteria; Step 2: seek external and internal feedback; Step 3: reflect the learning process and product with the support of feedback). The case study was designed to answer two research questions:

1. What is the status quo among students of self-assessment in mathematics learning?
2. Does gender differences exist in self-assessment in mathematics learning?

Method

Participants

Nine high school students from different Chinese high schools participated in this study. The participants consisted of four males and five females between the ages of 15 and 18. Female participants were labeled as S1 to S5, while male participants were labeled as S6 to S10. They came from different regions such as Guangdong and Shanghai in China (see Table 1).

Table 1. Participants Demographic

	S1	S2	S3	S4	S5	S6	S7	S8	S9
Gender	Female	Female	Female	Female	Female	Male	Male	Male	Male
Grade	2	2	2	1	3	3	2	3	2
Year	17	17	18	16	18	18	17	18	17
Region	Wuhan	Shanghai	Guangdong	Guangdong	Shandong	Liaoning	Jilin	Guangdong	Shanghai

Data Collection

With each participant's consent, an half-hour individual semi-structured interview was conducted and recorded. The nine individual interviews were conducted in Chinese and transcribed. Only responses from the participants cited in this paper were translated into English.

The first research question is about the status quo among students of self-assessment in mathematics learning. Since there are three steps of self-assessment in Yan's model(i.e. Step 1:determine/set self-assessment criteria; Step 2:seek external and internal feedback; Step 3: reflect on the learning process and product with the support of feedback.). The interview questions contained three sections. Gender differences were involved in every section.

The first section was about whether and how students determined self-assessment criteria in mathematics learning. The second section investigated the feedback students received from external and/or internal sources about the quality of their performance in mathematics learning. In the third section, students were asked whether they compared the feedback with their own self-assessment criteria and reflection based on the feedback. As the participants were high school students, the context of the study was based on high school education.

Data Analysis

Themes in the data were identified and reported according to the requirements of the thematic analysis method

(Braun & Clarke, 2006). Before analyzing the qualitative data, the accuracy of the transcriptions was double-checked by comparing the recordings to the transcribed text.

First of all, the interview data were then analyzed through a standard process of thematic coding. Three main themes were identified: determine/set self-assessment criteria, seek external and internal feedback, and reflect the learning process and product with the support of feedback. Each of the above themes includes gender differences in this theme as perceived by the students. Then the initial code was refined and categorized into the three themes (Braun & Clarke, 2006; Bryman, 2012).

Findings and Discussion

The Status Quo of Self-Assessment in Mathematics Learning and Gender Difference

According to Yan's model (2020), self-assessment is a three-step process. The first step in student self-assessment is to determine self-assessment criteria. The second step is to seek feedback on one's performance from both external and internal sources. External feedback comes from explicit course requirement, others' evaluations of the student's learning, etc. Internal feedback comes from internally generated feelings about the performance of the student. The third step is reflect on the learning process and learning outcomes with the support of the feedback.

Step 1: Determine Self-Assessment Criteria

In the first step, we investigated whether students set criteria for self-assessment. If so, how were the self-assessment criteria were set.

Most ($n = 6$) participants had explicit criteria for assessing their learning in mathematics as in Yan's model (2020). The other two participants indicated that they did not have explicit criteria, but had expectations for their mathematical learning (e. g. complete the study of the textbook, try to answer problems that they do not know) and the last participant indicated that she did not set criteria. Take an example of S8.

I set my study goals with the college entrance exams in mind. I make sure that I get all the basic questions right on my tests and assignments before working on difficult questions. ---S8

In the response of S8, he set his criteria as getting all the basic questions right in the exams and assignments, which was a very clear criterion.

In terms of gender difference in self-assessment criteria determination, when asked whether there were gender differences in setting learning standards in mathematics learning, most participants ($n=6$) agreed that there were no gender differences. In addition, two participants believed that because boys didn't care about learning as much as girls did so many of them didn't even bother to set self-assessment criteria in learning. One participant

also perceived that boys were better at mathematics so they would have higher criteria for themselves. As an example, here's what S7 said.

I feel that girls are more eager to excel than boys, who are more casual. Girls are stricter. They may feel that their long efforts are ineffective if they don't do well in one test. ---S7

In general, most students would set self-assessment criteria in their mathematics studies. In setting mathematics learning self-assessment criteria, most students did not believe that there were significant gender differences.

According to Leder (2019), at the high school stage, there were gender differences in solving math problems. Male students did better in solving mathematical problems. However, it is evident from our interview data that there is no significant difference between male and female students in setting self-assessment criteria for mathematics learning. Gender differences may be shown in other steps of self-assessment in mathematics learning.

Step 2: Seek Feedback from both External and Internal Sources

According to Yan (2020), the second step is to seek feedback on one's performance from both external and internal sources. Thus, the external feedback aspect investigated whether the student sought feedback from teachers and peers about the student's mathematics learning. The internal feedback aspect, on the other hand, investigated whether the student sought feedback from internal source about mathematics learning.

1.External Feedback

The majority of participants (n=8) indicated that they received feedback from their teachers about mathematics learning. Participants also reported that they received feedback from their peers, but the feedback from their peers tended to be less explicit. Take an example of S5.

My classmates tend not to make explicit comments about my performance in math studies. But in fact, we all have a general evaluation of everyone's performance in our minds. Students with higher grades will share their learning experiences with others, and then those with lower grades will seek help. ---S5

From S5, peers tended to give only approximate feedback about others' learning of mathematics. Nonetheless, peers provided feedback in the form of practical actions, such as explaining math problems to students who are struggling.

Regarding the question of whether there were gender differences in external feedback, most participants (n=6) said that there were no gender differences. They believed that people around them did not treat male and female students differently. In contrast, the other three participants believed that boys would be trusted more in their

mathematical learning abilities because they were better at mathematics and logical thinking.

2. Internal Feedback

All participants reported positive or negative emotions about learning mathematics. One participant also reported getting physical feedback (e.g., dizziness). When asked if there were gender differences in seeking internal feedback, more participants (5 compared to 4) agreed that female students were more likely to experience anxiety.

Female students may be emotionally just a little more intense than male students.---S5

I feel that female students will be relatively more anxious. because for female students, social science is their strength, science including mathematics is their weaknesses ---S7

In sum, participants reported gender differences in terms of internal feedback. But from the interview data, it did not appear that there was a significant difference between boys and girls in terms of seeking internal feedback. The idea that women are more likely to be anxious about learning math may stem from stereotypes about women.

According to Yan (2018), a person's willingness to seek feedback is related to the cultural context in which he or she lives. Individuals of cultures characterized by individualistic self-concept (e.g., the United States) seek feedback more actively than individuals from collectivistic cultures (e.g., China). Fear of losing face was a significant barrier to feedback-seeking behavior in China. Yet, we found that the majority of Chinese high school students in our survey were positive about receiving feedback. One possible reason was that as teenagers, high school students could view the world more openly. Compared to older people who cared about their face, high school students were not bound by society's culture and rules. Another possible reason was that Chinese high school students were under pressure to pass the college entrance exam. They were more eager to receive feedback to adjust their learning style so that they could get better grades.

Step 3: Reflect on the Learning Process and Product with the Support of Feedback

According to Yan (2020), the third step is to compare the feedback with their own self-assessment criteria and to reflect on the learning process and learning outcomes with the support of the feedback.

In terms of teacher and peer evaluations, the majority of participants (n=7) felt that their teachers' and peers' feedback were generally consistent with their own self-assessment criteria.

The teachers at our school have special software that tallies data on students' math performance, so the teachers' feedback on students' learning in math generally matches the reality. I also have great trust in the teacher's evaluations. --S8

My teacher has a high opinion of my learning in math and wants me to continue with my current performance. This is consistent with my self-assessment criteria. --S5

Notably, two other students, containing one male and one female student, both indicated in previous conversations that they excelled in mathematics and felt that their peers' feedback were inconsistent with their own self-assessment criteria. Here's what the two students, S3 and S7, said.

Sometimes I felt I did not do well on the test, but my classmates also thought I did well.---S3

My classmates thought I was studying hard at home, but I wasn't studying at all in my leisure time. ---S7

From S3 and S7, it can be observed that for students who do well in mathematics, their peers seem to underestimate their abilities. Overall, no significant gender differences were found in terms of seeking external feedback. In contrast, interview data showed that there were some differences between students who excel in mathematics and other students in terms of seeking external feedback.

According to the interview, most of the participants (n=6) indicated that they would consider adjusting the self-assessment criteria based on feedback from teachers. Among them, S3 and S7 both indicated that they would set self-assessment criteria with the goal of high school entrance examinations.

Because of preparing the college entrance exam, I will consider the balance between the various subjects. If I spend too much time on math, then I don't have time to study the social sciences.---S7

As for the reflections on internal feedback, most of the female students (n=4) reported that their emotions do not influence their setting of self-assessment criteria. While on the contrary, all of the male students believed that their self-assessment criteria are influenced by their internal feedback.

I think interest is the best teacher. If I am more interested in learning mathematics in this period of time, I think my learning effect will be a little bit better and my criteria may be higher accordingly.---S8

From the interviews data, it can be found that male and female students showed significant gender differences in terms of reflection on internal feedback.

From Yan (2018), there were notable gender differences in self-assessment practices. Female students showed higher levels of self-assessment practices than male students. Yan (2018) conjectured that female students engaged in more self-assessment reflections and were more willing to use self-assessment practices to check and monitor learning processes and outcomes. Our findings are consistent with Yan's (2018) conjecture. According to our data, there was a significant gender difference in reflections on feedback of mathematics learning. One possible reason is that girls are less likely to have their judgments swayed by emotions. Despite the stereotype that girls are more emotional, our research data suggest that female students are more assertive about the self-

assessment standards they set for themselves. They are less likely to be distracted by their own emotions. Compared to boys, girls are more able to make accurate reflections on their self-assessment.

Conclusion

The main findings of the paper are gender difference exists in self-assessment mathematics learning among high school students. There are three steps in self-assessment (Step 1: determine/set self-assessment criteria; Step 2: seek external and internal feedback; Step 3: reflect the learning process and product with the support of feedback) in mathematics learning. Gender differences varied across the self-assessment steps. In Step 1 and Step 2, it did not show significant gender differences. However, in Step 3, gender differences were significant. This study can help educators better understand the complexity of self-assessment in mathematics learning and the gender differences that exist within self-assessment process. It will enable teachers as well as researchers to better target their work to improve students' self-assessment of mathematics learning.

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Exploring the Relationship between Future Time Perspective and Academic Procrastination: The Mediating Role of Positive Emotions

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Abstract: Future time perspective is now increasingly catching attention in educational psychology field. There is evidence that students' future time perspective negatively affected students' academic procrastination. Although the relationship between future time perspective and academic procrastination is stable. There are research gaps to be filled. On the one hand, most attention was paid to older students such as undergraduates rather than primary students. On the other hand, we still know little about the mechanism of their relationship. This study aimed to explore the mediating role of students' positive emotion between their future time perspective and academic procrastination. A total of 185(92are boys and 93 are girls) primary students completed measures self-report in the study. Correlational results showed that future time perspective positively correlated positive emotion, negatively associated with academic procrastination, and positive emotion negatively linked to academic procrastination. Bootstrapped mediation results showed positive emotion partially mediated the relationship between future time perspective and academic procrastination. Theoretical and practical implications are discussed.

Key Words: Future Time Perspective, Academic Procrastination, Positive Emotion, Mediation

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Introduction

Procrastination occurs at any time in peoples' lives. This kind of phenomenon becomes even more apparent in the academic settings (Strunk & Spencer, 2012). Over 70% of undergraduate students show the tendency of procrastination on a regular basis (Klingsieck, 2013 et al) and Pychyl and Haghbin reported in 2012 that there is a great deal of research that demonstrated the negative consequences of this performance. Students who got lower grades were found procrastinated in learning context. (e.g., Fritzsche, Young,et al; Klassen et al., 2008). Especially, the grade relates work that are required to be finished during the course (Morris & Fritz, 2015). Procrastination could lead to people emotion problem, include sadness, pressure, guilt, anxiety, anger, shame, dissatisfaction (Grunschel et al., 2013).

Procrastinations are found damage their daily life, like loss of money, absence of social relationship and terrible reaction to others. Postponing the time of completing the work lead people experience negative emotion, and ultimately doing them poorly (Vallerand et al., 1992). According prior researches (e.g., Grunschel, Patrzek, & Fries, 2013; Steel, Brothen, & Wambach, 2001, Diener, Oishi, & Lucas, 2003). The two significant part of subjective well-being that was related to academic procrastination were affective (emotions and moods) and cognitive (evaluations of life or different life domains) well-being. Many researchers have explored how individual differences lead to procrastinating tendency. Individuals' different level of time perspective have indicated that the factors of a person's time perspective can act as a protector against procrastination (Zabelia, Chestyunina, Trushina, & Vedeneyeva, 2018).

Although the relationship between future time perspective and academic procrastination is stable. There are research gaps to be filled. Firstly, most attention was paid to older students such as undergraduates rather than primary students even though the latter group was as strongly influenced, if not more, as the former group by the blooming of mass media and exhibited procrastination at school. Secondly, even though there is consistent evidence pointing to the negative relation between future time perspective and procrastination, the mechanism of such link remained under explored. It is possible that students tend to experience more positive emotion, which in turn reduce the tendency of procrastination.

The current study aims to fill these two gaps. Exploring their mechanism would be beneficial for latter intervention in reducing procrastination. Such intervention would be more effective than older students considering primary student are in rapid physical and psychological development stage. Besides, this study would deepen the understanding of the impact of future time perspective on primary school students' procrastination academic settings. And this study would deepen our understanding of the individual factors of procrastination and inspire educators in the primary stage to better help students improve their performance at school.

Review

Future Time Perspective & Procrastination

Academic procrastination means students tend to put off or delay tasks related to one's studies thereby they are either not able to fully complete before deadline or have no choice but to finish hastily (Soloman & Rothblum, 1994). The future time perspective can be defined as "the mental representation of the future constructed by individuals at certain points in their lives and reflecting personal and social contextual influences" (Leonardi, 2007, p. 17) or as "the present anticipation of future goals" (Simons, Vansteenkiste, Lens, & Lacante, 2004, p. 122). Recent studies showed that lack of orientation to the future as factors predicted a high level of procrastination. Individuals with high procrastination rates were less focused on future plans, goals, and prospects, and are convinced that their future is doomed and can not to be changed by ones' endeavor (Zabelina, 2018).

The Potential Mediation Role of Positive Emotion

Watson and Tellegen in 1988 pointed out that positive emotion is refer to the extent to which a single person perceived alert, enthusiastic, and active. It was found that high positive emotion has been defined as involving high levels of energy, concentration, and pleasurable engagement in activities (Watson et al., 1988). Study found that Future time perspective correlated with subjective well-being (SWB), which play a momentous role in the positive emotion. (Coudin and Lima 2011), and students who experience positive emotions less likely to delay (Balkis & Duru, 2016; Rahimi, 2019; Zhou & Kam, 2016). For example, students with hope while doing their academic tasks reported that they feel confident that they believe they have the ability to be well versed in study, and depleting procrastination simultaneously (Rahimi, 2019). The above literature actually points to a mediation path between future time perspective and procrastination through positive emotion. However, such an indirect path has not been tested.

The Current Study

The present research so far has highlighted the links between: (1) student future time perspective and positive emotion; (2) positive emotion and procrastination; and (3) student future time perspective and procrastination. To fill the above mentioned research gaps, the present study aims to address the following two research questions: 1. Future time perspective, positive emotion and academic procrastination correlate. 2. Positive emotion is a mediator between future time perspective and academic procrastination.

Thus, we hypothesize that. Hypothesis 1:H1. future time perspective, positive emotion and academic procrastination are correlated respectively. Hypothesis 2: positive emotion partially mediates the relation between future time perspective and academic procrastination.

Methodology

Participants

Through convenient sampling method, we approached teachers in a private primary school in China, six of who agreed with the study. The students in their classes were invited to complete an online questionnaire.

A total of 185 students initially took part in the research. We delete one of the responses, because one's answer time was more than 2 standard deviations shorter than the average, and after checking his answer in detail, we found his answer is arbitrary, thus the final sampling size is 184 (91are boys and 93 are girls) Their mean age was 11.8 ($SD = 0.64$). Thirty-five students are from grade five, and the rest are from grade six.

Data Collection

Participation was voluntary for this study, and informed consent forms were signed and collected from both the

students and their guardian. The study was explained to them before they filled out the questionnaire. The questionnaire was administered during class hours. The psychological teacher read the instruction before students answered the question.

The questionnaire was uploaded to an online survey tool www.wjx.cn and its QR code was generated (which is very popular in China). A correlational cross-sectional method was adopted in the study. The participants reported their demographic information, future time perspective, positive emotion and procrastination study.

Instruments

Demographic information includes students' age, gender and academic level (a=good, b=average, c=bad) others scales were responded to on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

a *Time Perspective*: To measure students' future time perspective, Chinese version of ZTPI (Wang, 2016) was used, which was based of Zimbardo Time Perspective Inventory. it comprises 25 items, assessing past negative, present impulse, future, past positive, present fatalistic. Future time perspective was used in this study, sample question: *ex. when I want to do something, I will set a goal and find a way to achieve it.* High score indicated high level of future time perspective. Five items that relates to FTP was analyzed. Internal consistency was satisfactory (Cronbach's Alpha = .530).

b *Positive Achievement Emotion*: The short version of Achievement Emotion (AEQ-S, Maik et al., 2021) was used in the current study to evaluate students' positive emotion in general learning. It includes three positive emotions namely enjoyment (*ex: I enjoy the challenge of learning the material*), hope (*ex: I feel confident when studying*), and pride (*I am proud of myself*). Internal consistency was high (Cronbach's Alpha = .873).

c *Academic Procrastination*: Lay's (1986) Procrastination Scale-For students' population was used. It consists of 20 items. *ex I realize I always do the job I should already done.* high score indicated high level of academic procrastination. Internal consistency was satisfactory (Cronbach's Alpha = .787).

The time perspective scale and academic procrastination scale were administrated in Chinese. Positive emotion scales were originally in English and were translated into Chinese for present study by English postgraduate students. Back translation was used to increase the accuracy of the translation. Discrepancy was solved through discussion between the researcher and one proficient English teacher in the approached primary school. The research protocol was approved by the Ethics Committee of the Ethics Committee of Hunan Normal University.

Data Analysis

The data were originally screened and processed in terms of missing values, outliers, reliability, descriptive statistics, and normality tests. To answer the Research question 1, a series of Pearson correlation analyses were

conducted using SPSS 26. Later on, bootstrapped mediation analyses were conducted to test the proposed mediating model.

More specifically, (1) future time perspective, positive emotion and academic procrastination are correlated respectively.(2) positive emotion partially mediates the relation between future time perspective and academic procrastination .After the PROCESS v2.16.3 (Model 4) developed by Hayes (see <http://www.afhayes.com>) was further used to examine the relationship among these variables collectively, calculating the total indirect/mediating effect size, comparing specific indirect effects of future time perspective, positive emotion, and academic procrastination offering corresponding bootstrap confidence intervals automatically.

Future time perspective is defined as independent variable, Academic procrastination is defined as Dependent variable, Positive emotion is defined as Mediator. the mediating effect as well as the corresponding bootstrap confidence intervals was provided via further analysis using PROCESS v2.16.3 (Model 4). If 95% confidence interval does not include zero, so we can conclude with 95% confidence that positive emotion mediated the future time perspective and academic procrastination.

Results

Descriptive Results

From Table 1, we could observe the descriptive statistics. The means showed that most participants perceived they have high future time perspective, they are positive and low level of academic procrastination. Skewness and Kurtosis was conducted and represented that the variables under discussion were normally distributed, allowing subsequent parametric analyses. According to the benchmarks proposed by Plonsky and Oswald (2014) in the field of ISLA research,

Table1. Descriptive Statistics of All Variables

Variables	Range	M	Sd	Skewness	Kurtosis
FTP	8-25	18.9	3.46	-.327(.179)	.168(.356)
PE	10-60	45.9	10.19	-.768(.179)	.657(.356)
AP	23-72	40.32	10.5	.752(.179)	.163(.356)

Correlation Analysis

Table 2 reveals different sizes for the correlations between students' future time perspective, positive emotion and academic procrastination (Bonferroni corrected). Future time perspective was positively linked to positive emotion, and negatively to academic procrastination. Positive emotion was negatively linked to academic procrastination. In other words, students who has high future time perspective tend to experience more positive emotion and less procrastinated.

Table 2. Correlation Matrix of All Variables

Variables	Ftp	Pe	Ap
FTP	-	-	-
PE	.593**	-	-
AP	-.603**	-.572**	-

Notes. $n = 184$. ** $p < .01$.

Mediation Analysis

The mediator model is depicted as Figure 1. Mediating effect size and comparison between the mediating effects of enjoyment and boredom are presented in Figure 2. As was shown in figure2, the effect sizes of future time perspective on academic procrastination, positive emotion on academic procrastination and future time perspective on positive emotion, were -1.23, .34 and 1.74 respectively, and the 95% confidence interval (from -1.65 to -.820, from -.483, -.200, from 1.398, 2.092) indicated that all of them reached a significant level. The 95% confidence interval didn't include zero (from -.916 to -.2873), so we can conclude with 95% confidence that positive emotion mediated the relationship of future time perspective and academic procrastination. And the total mediating/indirect effect size was -.596.

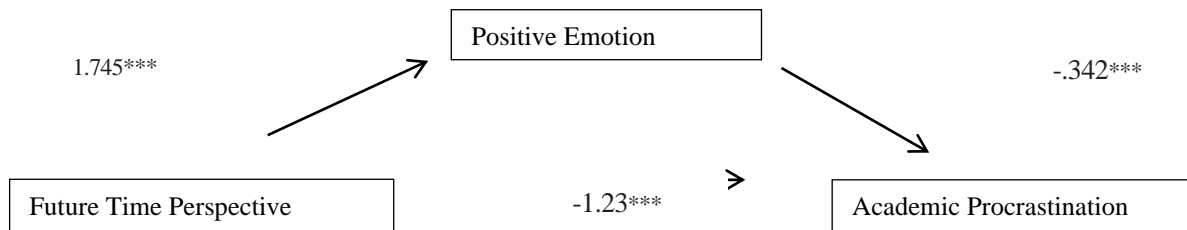


Figure 1. The Statistical Diagram Mediation

Pathway	Effect Size	SE	BCa 95% CI
Future time perspective--academic procrastination	-1.23	.2111	[-1.65,-.820]
Positive emotion -academic procrastination	-.342	.0717	[-.483,-.200]
Future time perspective--positive emotion	1.745	.1758	[1.398,2.092]
Total indirect effect	-.597	.2111	[-.916,-.287]

Figure 2. Analysis of the Mediation Model

Discussion

The first research question highlights the relation between students' perceptions of future time perspective, positive emotion and academic procrastination. Future time perspective was shown to have a positive relationship with positive emotions, and a negative correlation were found between future time perspective and academic procrastination and between positive emotion and academic procrastination respectively. Thus, it seems that future oriented students are more likely to experience positive emotions (e. g. enjoyment, hope, pride) and acted less put off in learning.

The following research question revealed a mediating model that the student positive emotions mediated the relationship between future time perspective and academic procrastination. People in high level of future time perspective may be optimistic and energetic and this led to them complete tasks immediately. To set a specific goal and have a plan may be useful for reduce students' procrastination and help students perform well in studying. Through this research, we come to the results that future time perspective could predict whether individual postpone in learning context, which confirm and expand Zabelina (2018) typology.

This study moves forward the understanding of the impact of future time perspective on primary school students' academic procrastination in China culture background. In addition, the mediating of positive emotion in the present study suggests that students who has strong future time perspective would be positive, which mitigating their academic procrastination finally. In the real practical situation. Elementary educator could understand more about the mechanism of students' academic procrastination, so they are supposed to help students prepare for the future.

Limitation and future direction

This study is subject to certain limitations. First, it employed a cross-sectional design. The following empirical research could involve in longitudinal survey design to collect data over a period of time. Second, all the participants were from one school, and this kid are from high SES family, which might undermine the generalizability of the research findings. Moreover, the way we collect data was only self-report, more parents and teachers' evaluation could be included in the future.

Conclusion

This study explores the relationships between future time perspective and academic procrastination and the mediation role of positive emotion between the two. The results indicate that students who think future more tended to procrastinate less. Moreover, students who felt confident, proud and pride rarer procrastinate than their peers.

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Dating Motivation among Hispanic Emerging Adults: Revisiting the DEARR Model

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Abstract: In 2002, Bryant and Conger presented the DEARR model (Development of Early Adult Romantic Relationships) to explain how family of origin impacts romantic relationship outcomes. The framework posits that dysfunctions, attachment, problem-solving skills and other relational mechanisms learned early in life have a strong direct and indirect impact into relationships later in life. To date, there is not much cross-cultural research available in application of the DEARR model (Deitz et al., 2015). Dating for emerging adults in the last decade has changed with the advancement of technology and dating apps as well. The present study applies the DEARR model with a purposive sample of Hispanic college students to explore how this impacts dating preferences. The pilot study consisted of 41 participants willing to complete a survey of scaled items and open-ended questioning about family of origin, parents and dating behaviors. The sample was 70% Hispanic, 68% female and ages 18-22 ($m = 20.2$). Emergent themes were found through systematic coding and recoding. The first major theme *Relationship with Parents/Family-of-Origin* included two sub-themes: *Positive/strong* and *Distant/cold*; the other main theme *Romantic Relationships during Emerging Adulthood* likewise provided two main sub-themes: *Trust* and *Pressure*. These themes are discussed in results and discussion.

Keywords: Family-of-Origin, Emerging Adults, DEARR Model

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Introduction

In 2002, Bryant and Conger presented the DEARR model (Development of Early Adult Romantic Relationships) to help explain how family of origin impacts romantic relationship outcomes among emerging adults. Theoretically, interactions during family of origin, such as positive or negative interactions, punishments, celebrations, habits, cultural or religious practices or other familial characteristics have an impact on individual competencies later in life. In particular, romantic relationships. Bryant and Conger (2002) suggested three keys in which individuals internalize early family of origin interactions and later externalize in their own relationships. First, *Observational Learning* (Bandura, 2008; Fryling et al., 2011) of which patterns of interpersonal behaviors are modeled and reinforced early in life. Individuals may observe a sibling or parent

behavior become reinforced and thus learn a behavior or may engage in certain behaviors and have a likewise reinforced outcome. The second key is *Socialization* (Tsai et al., 2015) the day-to-day interactions between family members in family-of-origin that accounts for interpersonal behaviors that become patterns. family context and direct interactions that help shape you in private and in public (Maccoby, 1994). Lastly, *Behavioral Continuity* (Ferguson & Horwood, 1996), that helps account for peer affiliations or interaction styles that play a role in shaping the circumstances of an individual across the lifespan.

Application of the DEARR Model

To test the DEARR model, a pilot study was conducted in 2000 to determine what extent of adolescent experiences (during family-of-origin) and behaviors would predict levels of warmth with regard to dating relationships in young adulthood (Conger, et al., 2000). Using a longitudinal secondary data set, the researchers found that adolescents who reported having more nurturing parents were also more likely to express more warmth towards their romantic partners later in life. In 2012, Masarik and colleagues conducted a longitudinal study with over 260 participants and their romantic partners to explore how adolescent family experiences and personality predicted the quality of early adult romantic relationships. As predicted by the DEARR model, participants experiencing high parental warmth and support and low levels of inconsistent discipline were more likely to report confidence in marriage and emotional investment.

Researchers have also explored how parenting inconsistencies (during adolescence) are connected to adult interactions later in life among those cohabitating and married (Surjadi et al., 2013). In 1998, Smelser suggested that adolescents act out on frustration with parents towards others, such as peers at school, but could there be a persisting issue into emerging adulthood? Using the DEARR model, Surjadi and colleagues explored family of origin, individuals and their partners responses from a series of questions and found support for parental discipline practices leading to changes in romantic relationship quality. In short, the researchers found that harsh and inconsistent discipline methods led to higher risks of externalizing issues or problems during late adolescence and young adulthood. As adolescents transitioned into young adulthood, they reported having high ambivalence towards parents. Later, this ambivalence was also elevated towards their romantic partners and showed more aggression than those with better parenting support earlier in adolescence.

According to the findings, understanding parent-relationships and experiences from the past can be equally important to the current context an individual lives within. Ackerman and colleagues (2013) further explored how positive engagement experiences-within family of origin-can predict successful marital outcomes up to 20 years after. By applying the DEARR model, Ackerman and colleagues counted observed expressions of positive engagement and found a strong association between positive climate/engagement and marriage quality.

Method

Procedures

After IRB approval, surveys were distributed at a small southwestern public university in Texas. Surveys were made available to enrolled college students by way of email invitations sent to psychology courses that took place during the summer 2022 session. Participants were taken to the survey after clicking on a link or using a QR code. Participants were notified they could stop at any point or skip any questions they choose not to answer. Demographic questions (e.g., *age*, *year in school*, *ethnicity*, and *parents' marital status*) and open-ended questions comprised the entire survey. Open-ended questions (e.g., “*Describe your relationship with your parents during adolescence*” or “*How involved are your parents in your dating life today*”) were provided with optional follow-up prompts (“*is there more you could share regarding why you answered the way you did?*”) allowed for more exploration and response from participants.

Participants

Because this was a pilot study connected to a summer scholar program, the sample was fairly small (N=41). This was somewhat purposive by design as many questions were open-ended and allowed for follow-up prompts when students selected to provide more detail of their family-of-origin experiences. Majority of participants were Hispanic (68%) and female (68%). The age ranged from 18 to 22 (m = 20.2). Upperclassmen comprised the majority of the sample (71%; n=29).

Results

Through thematic analysis, a clear picture emerged with two themes and four sub-themes. These themes will be discussed in order as seen in Figure 1 below. Just over half of the sample (n=22) reported that parents were still together (n=53%). Among these participants, only seven did not respond regarding dating expectations or pressure from parents. All participants reported parent-treatment and family-of-origin experiences during adolescence and while conducting coding procedures, themes began to emerge indicating positive or negative experiences. Under questions regarding family-of-origin and parenting experiences during adolescence, participants reported feeling close to at least one parent (nearly 63% of the time) and both parents (an additional 20%). Nearly 1 in 5 students reported negative experiences with their parents (17%) during adolescence and were much more likely to report lower levels of trust or open dialogue with parents about dating.

The main theme *relationship with parents during adolescence* is supported by two sub-themes that emerged: *Positive/strong*, which represented the majority of participants with happy parents or more positive family-of-origin experiences. Second, *Distant/cold*, which featured participants with more negative experiences early on and often coupled with parental separations or dissonance.

Under the *romantic relationships during emerging adulthood* theme, two sub-themes emerged. Majority of

participants reported willingness to share with at least one parent their dating preferences, experiences and desires. Another sub-theme *pressure by parents* emerged among a small number of participants who refused to share anything, had limited or no contact to parents at all during emerging adulthood and were far more likely to report feelings of anger, mistrust, bitterness and frustration with parents, often from experiences in the past. Majority of participant codes that were grouped into this sub-theme also reported more feelings of distance and coldness towards parents from adolescent times. One participant went as far as saying: “They just want to dump me onto someone else, they don’t even care.”

Question Item	Themes	Associated Quotations
Relationship with Parents during Adolescence	<i>Positive; Strong</i>	“I feel like I can share concerns easily with my parents and always have.” “I usually talk sex with my mom, not my dad but I am close to both...” “My parents were firm with me but kind and caring, I’m still close with both of them and they love each other and always [have]”.
	<i>Distant; Cold</i>	“I was treated very different from my brothers and didn’t think it was fair...I usually don’t share much about my dating life with either parent”. “They worked hard and I had to meet their expectations like all the time, sometimes they wouldn’t listen or care about my interests”. “I moved in with an older sibling the day I turned 18. My parents are split and neither parent can be in the same room as the other”. “I cut all ties with those abusive ***** years ago...” “...we fight a lot.” “My parents got divorced when I was 14...” “Mmm, not close at all and rarely share anything”.
Romantic Relationships During Emerging Adulthood	<i>Trust</i>	“I talk to my mom about everything and she is so supportive”. “I can talk to my parents about my boyfriend but they don’t snoop on me”. “My mother is super close to me, like a best friend...” “I can share things and ask for advice, even though my parents are separated they are still kind and caring and wish the best for me and my boyfriend”.
	<i>Pressure by Parents</i>	“My mom heavily pressures me to date and worries my education isn’t enough to live on”. “My parents don’t really want me to date until I am finished with school and have become independent”. “My mom wants me to be stable and self-driven and asks about dating life all the time”. “I have been set up with people at church and I hate that, like I just want to date someone on my own terms and not someone my mom knows”. “I look for a man with a kind heart and even that idea that I’m looking [scares] my parents”.

Figure 1. Emergent Themes from Open-ended Responses

Discussion

By exploring experiences during family-of-origin, early adolescent years and parent relationships and by assessing current relationship and dating behaviors, the present study was able to apply the DEARR model and seek support through the model to determine if a cross-cultural pilot study would support the primary tenets of

the particular lens (Dietz et al., 2015). As evident in Figure 1, participants openly shared many positive experiences and a few negative ones. It is very clear that parenting behaviors have a lasting impact on individuals, especially among Hispanic college students who often report more trust when closer to parents but also report feeling a sense of pressure to date. Other participants reported a feeling of distance to parents, especially if there were more negative behaviors earlier in life. Unsurprisingly, those who did feel distant felt less pressure but also less trust. This could possibly be explained by the fact that there was more limited communication or opportunities for parents to interject dating habits.

There is much more work to come of this study and future studies should further explore ongoing relationships with parents. Not just to seek a better understanding of how family-of-origin or parenting behaviors early on in life impacts development of emerging adults' romantic relationships, but also to understand at a cultural-level, how parents engage with their adult-children. If relationships are soured through parenting practices or divorce earlier in life, what factors are necessary to help emerging adults be more successful in their future relationships? There were a number of comments from participants reporting their mom as being akin to a best-friend. This was not true for fathers in any instance. Future studies should also consider parent-specific behaviors earlier on, perhaps father-to-daughter, father-to-son and mother-to-daughter and mother-to-son dyadic relationships to help provide more context under the DEARR model lens.

Conclusion

This study attempted to apply the DEARR model using a cross-cultural sample and attempted to explore how family-of-origin experiences impact dating and dating behaviors during emerging adulthood. While past studies have explored contributions of family-of-origin later in life (Johnson et al., 2015), none have explored primarily Hispanic sample populations as this pilot study has. According to the DEARR model, family-of-origin experiences have an important influence with romantic relationship outcomes later in life (Bryant & Conger, 2002). For this pilot study, over 40 emerging adults were asked about their family-of-origin experiences, their trust and relationship with their parents back then and currently, as well as their dating experiences and openness to share with their parents. To the authors' knowledge this is the first purposive sample of a primarily Hispanic college base to apply the DEARR model and to explore how often Hispanic emerging adults involve their parents in their dating lives, while understanding their past behaviors.

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Examining Music Students' Self-Regulation Behaviors

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Abstract: This research aims to examine the self-regulation behaviors of students studying at undergraduate level in music fields in different faculties in their music education processes and the differentiation of these behaviors according to various variables, and to collect students' opinions about instrument playing behaviors. In this study, which used mixed method, data were collected by scanning and interview techniques. For the quantitative part of the study, the scale developed by Miksza (2012) draws attention when the studies examining selfregulation strategies in music education are examined. This scale was later adapted into Turkish by Ersözülü and Miksza (2015) and named "Self-Regulation Behaviors of Music Students". In the study, a personal information form was also used in order to obtain information about the socio-demographic variables of the participants before the scale questions. the research consists of students (n=240) studying in music undergraduate programs in Conservatories, Fine Arts and Art Design Faculties and Education Faculties located in different regions of Turkey. In the results, it was seen that there were significant differences between the 3rd and 4th grades behavior of the students, and in terms of the method between the 1st and 3rd and 3rd and 4th years in terms of the instrument study year. In addition, students say that they start a new piece with excitement by reading the notes, plan the time to finish the pieces, record and listen to the audio for self-control, evaluate themselves, use personal strategies such as taking notes, and they cannot allocate enough time to study.

Keywords: Music, Self-Regulation, Music Education, Learning Strategies

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Introduction

The items to be learned in the music education processes become permanent with the analysis and repetitions made by the students (Ericsson et al., 1993). In order for these repetitions to reinforce the correct behaviors, students must have a high level of awareness (Carver & Scheier, 1981). Metacognitive activities such as mindfulness help them gain conscious working habits. Students who take their own responsibility are expected to be more successful (Schon 1983, cited by Mills 2002). One of the tenets of social learning theory is that "people have the capacity for self-regulation" (Bandura, 1986). Individuals who use this capacity well tend to take responsibility for their own learning in the social environment. Later, this subject gained more attention and the concept of self-regulation was defined as "an active and constructive process in which students, who set

their own learning goals, try to regulate their cognition, motivation and behavior, create and control their goals and the variables in their environment” (Pintrich , 2000: 452).

Various models have been sought to describe this process. One of them is Zimmerman 's Social Cognitive Self-Regulation Model (2002). In this model, the learning environment is described as a pre-thinking phase, a performance phase, and a self-reflection phase. In the process of self-regulation, internal beliefs have a great effect (Özmenteş, 2014, Şeker, 2014). Self-efficacy beliefs are the state of feeling self-sufficient for the purpose. This belief affects subjects such as task choice, effort, perseverance, resistance and success (Schunk & Pajares, 2001). Belief in self-locality also constitutes the source of self-regulation motivation.

There have also been models trying to explain the self-regulation process in the fields of music education. McPerson and Zimmerman 's (2011) self-regulation model in music education explained the process with the 5W 1K question technique. In the model, it is explained that the motivation sources will start and the target will be determined, and that one of the main sources of this process is self-efficacy belief. In order to evaluate the performance, special techniques for self-observation training should also be included. In addition, it was stated that it should be chosen according to concentration on subjects such as working time and place (McPerson & Zimmerman, 2011: 134).

Addition, Miksza expressed the self-regulation behaviors used in the music education processes as knowing the study method, controlling the behaviors, managing the skills of using time during the learning process and controlling the social effects (2012). Revealing the use of these and similar behaviors by music students will be beneficial in the process of creating new education plans. For these reasons, this research aims to reveal the self-regulation behaviors of music students. In the study, "Do the self-regulation behaviors of the students studying in different programs at the undergraduate level in the music education process differ significantly according to various variables?" search for an answer to the question

Method

In this research, descriptive and quantitative data were obtained and data were collected with survey models. In the study, the scale named “Self-Regulation Behaviors of Music Students”, which was developed by Miksza (2012) and later adapted into Turkish by Ersözülü and Miksza (2015), was used among studies examining self-regulation strategies in music education.

In the study, a personal information form was also used in order to obtain information about the socio-demographic variables of the participants before the scale questions. The study group of the research consists of students (n=240) studying in music undergraduate programs in Conservatories, Fine Arts and Art Design Faculties and Education Faculties in different regions of Turkey. In order to reach these students, the questionnaires were applied under the control of the researcher after the necessary permissions and connections were established by contacting the relevant departments. Voluntary participation of students has been essential.

The Cronbach's Alpha value was calculated as (0.878) for the reliability of the study, and the construct validity level (59.977) was considered to be valid because this value was over 50% (Filed, 2009: 661). while it was found to be excellent with KMO (0.827).

Results and Discussion

In the results of the study, there is no significant difference according to gender variables, the instrument/vocal type, age and school types self-regulation behaviors and sub-dimensions of music students ($p > .05$). There is no significant difference according to grade levels, self-regulation behaviors and some sub-dimensions of music students ($p > .05$). But in the Behavior dimension ($p = .041$) there is a significant difference ($p < .05$). In the results of Dunnett's t post hoc test, there was a significant difference between the 3rd and 4th grades ($p = .03$) in the behavioral dimension ($p < .05$).

There is no significant difference according to musical students' instrument study years, self-regulation behaviors and some sub-dimensions ($p > .05$). However, there is a significant difference in the method dimension ($p = .013$) ($p < .05$). In the results of the Tukey post hoc test, there was a significant difference between the 1st and 3rd years ($p = .016$) and the 4th and 3rd years ($p = .046$) in the method dimension ($p < .05$).

In the results of the study, the self-regulation behavior average of the music students was found to be ($\bar{x} = 148,1167$). According to the results obtained, it is thought that the rate of using the self-regulation behaviors of the music students is positive. According to McPherson and Zimmerman (2011) music students tend to use self-regulation behaviors frequently. This idea supports the research finding. There was no significant difference in terms of self-regulation behaviors scale scores and sub-dimensions according to gender. Güler (2015) stated that a significant difference was found in favor of women in the study conducted by pre-service teachers on self-regulation. The reason why this result is different from our research can be interpreted as the different characteristics of the study groups.

There was no significant difference in terms of self-regulation behaviors scale scores and some sub-dimensions according to the class variable, but there was a significant difference in the Behavior dimension ($p = 0.041$) ($p < 0.05$). According to the results of the Post hoc test, it was revealed that there was a significant differentiation in the dimension of behavior in the 3rd grades compared to the 4th grades, and it was determined that the difference was in favor of the 3rd grades. Aybek and Aslan (2017) found that there is a significant difference between 1st and 4th grades in the self-assessment dimension in favor of 1st grades in their study on pre-service teachers (467). Although this result is similar to the research finding, it is remarkable that it is in different classes.

There was no significant difference in terms of self-regulation behaviors scale scores and some sub-dimensions according to the instrument working year, but there was a significant difference in the Method dimension ($p = 0.013$) ($p < 0.05$). According to the results of the Post hoc test, this difference revealed that there is a significant

difference in the method dimension of the students whose instrument study year is the 3rd compared to the students who are in their 1st and 4th years. When the averages were examined, it was determined that there was an increase until the 3rd year, and that it decreased in the 4th year and had a higher average. Schmidt, Zdzinski, and Ballard (2006) and Şeker (2014) state that, unlike their studies on similar subjects, there were no significant differences in terms of the year variable.

Conclusion

As a result of the study, the self-regulation behaviors of music students differ according to the class variable in the behavior dimension and according to the instrument study year variable in the method dimension. Some studies have produced similar results. It is recommended to create educational environments that allow music students to use their self-regulation behaviors more controlled.

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Academic Optimism in the Context of Social Cognitive Theory

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Abstract: Optimism has positive expectations for future events. An individual's level of optimism is related to his past experiences. On the other hand, academic optimism reflects the level of positive expectations in the individual's future life, depending on the successes, happiness, and joys experienced in his past academic life. In this study, the concept of academic optimism is explained in the context of social cognitive theory. Guiding explanations of the social cognitive theory are included in understanding the concept of academic optimism in schools. How the triple determinism model is adapted to the school environment is explained based on the triple reciprocity model. Studies demonstrating the importance of collective efficacy, confidence, and academic emphasis, which are components of academic optimism, for student success are included. Information was given about the postgraduate theses on academic optimism in Turkey. It has been understood that studies have focused more on the relationship between leadership styles and academic optimism.

Keywords: Social Cognitive Theory, Academic Optimism, Collective Efficacy

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Introduction

Positive psychology focuses on the distinctive features of organizations of which individuals who are happy and have job satisfaction are members. In this sense, it can be said that positive psychology is more interested in individuals' positive views, feelings, thoughts, and experiences (Seligman and Csikszentmihalyi, 2000). After World War II, positive psychology was born. After this period, it was observed that studies in the field of psychology focused on reducing and eliminating the adverse effects of war on individuals. In this period, positive psychology aimed to increase the quality of life by enabling individuals to move away from anxieties and evil thoughts. The practices suggested by positive psychology to cure ailments, prevent mental illnesses, and treat existing conditions have been the leading force.

Research in the field of positive psychology has revealed that the emotional traces of individuals from their past lives are related to the emotional states they are experiencing and their expectations for the future. Accordingly, individuals' subjective well-being, past satisfaction and satisfaction, present joy, emotional pleasure and happiness, and their hopes, beliefs, expectations, and optimism for the future are interrelated (Seligman, 1998).

As individuals' well-being increases, their current happiness and positive expectations about the future also increase (Kurz, 2006).

Humanistic psychologists such as Abraham Maslow and Carl Rogers, who argued that research in the field of psychology should focus on human power, argued that individual well-being is more important than social well-being. These researchers suggested alternative methods, stating that current scientific methods are insufficient to investigate the workforce. According to these researchers, the procedures used should help understand how individuals will have a satisfying and fulfilling life (Kurz, 2006). The primary purpose of positive psychology is to try to understand the personal characteristics and application tendencies that positively affect the psychological health of the individual and society. In this way, practices can be developed to increase the happiness levels, optimism, and positive beliefs of both the individual and the society. As a result, studies in the field of positive psychology have shown that the individual's past experiences affect the state of optimism. Therefore, the emotions such as happiness, joy, and satisfaction experienced by the individual in the past and currently determine the level of optimism.

Social Cognitive Theory

Explanations of social-cognitive theory also contributed to the development of the concept of optimism. According to this theory, individuals learn by observing others. Individuals interact with each other in the learning environment. In this process, the learner finds the opportunity to attend to the models in the background and develop their mental functions. The mental capacity of the learner affects the level of realization of the behavior observed from the model (Bandura, 1971).

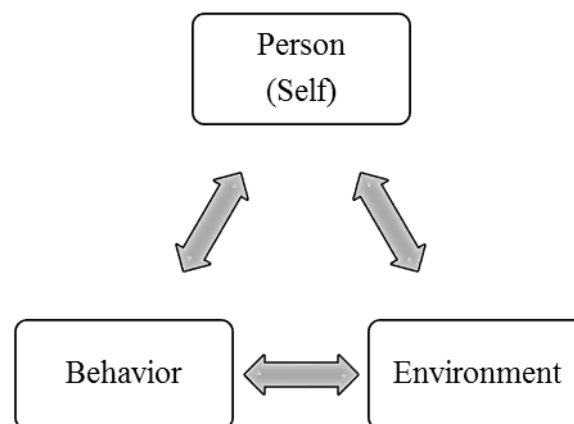


Figure 1. The Triadic Social Cognitive Theory (Bandura, 1997)

According to Bandura (1971), individual characteristics, environment, and behavior interact (see Figure 1). Personal characteristics and environmental stimuli determine the following behavior of the individual. The individual's behavior can cause the incentives in the environment to change. For example, the teacher can change some students' behaviors in the classroom environment by operating the classroom rules. Such adaptation of teachers' behavior implies the need for transformation of education (Noroozi & Sahin, 2022a,

2022b). Some unpredictable behaviors of students may also cause new regulations to be added to the classroom rules. In this process, there may be positive developments in the students' characteristics. The tendency of students to obey the rules may increase. As a result, individuals affect and change the environment in specific ways. Various individual characteristics such as level of argumentation (Noroozi et al., 2012; Valero Haro et al., 2019; 2022), gender (Noroozi et al., 2020, 2022), and epistemic beliefs (Noroozi, 2018, 2022; Noroozi & Hatami, 2019) could also play a role in this regard. On the other hand, the setting can determine people's later behavior. An individual's level of optimism can reduce the effect of environmental pressures.

Bandura (1997) does not suggest that the three factors in the triple reciprocal causality model contribute equally to behavior. The relative influence of behavior, environment, and person depends on which aspect is most vital at any given moment. These relationships occur in a complex, multidimensional coexistence in which people control their lives through active actions. This is also true for school staff, which is a social environment. Teachers can regulate and change their behavior as they encounter new situations.

Self-efficacy is an individual's belief in their capacity. As the individual experiences successful experiences in a particular area, he develops his self-efficacy belief in that area. The opposite of this situation is also true. Negative experiences of an individual regarding a particular task cause a weakening of the idea of being successful in that task. When an individual completes a task successfully, it increases their self-efficacy belief for that task. Depending on this situation, he may have positive expectations for problems related to that task. Therefore, the individual's developing self-efficacy belief about a task can make them more optimistic about it.

The social cognitive theory emphasizes that individuals use four primary resources to form their individual or collective efficacy beliefs. These sources are personal experiences, vicarious experiences, social persuasions, and emotional states (Bandura, 1997). Personal experiences are beliefs derived from interpretations of past performances. Successful experiences on a subject increase the individual's self-efficacy belief, while unsuccessful experiences weaken the individual's self-efficacy belief. Indirect experiences are experiences derived from interpretations based on the comparison of one's own ability with another individual. Observing successful experiences by individuals with the same status as one's self can increase self-efficacy belief. Social persuasions refer to encouraging feedback from others. Positive messages from the close circle of the individual, the individuals he values, and the abilities of his peers can support the self-efficacy belief. Emotional states are derived from the interpretation of emotions. Self-efficacy belief may weaken when the individual feels anxiety and stress.

Academic Optimism

Optimism has positive expectations for future events. An individual's level of optimism is related to his past experiences (Seligman, 1998). On the other hand, academic optimism reflects positive expectations in the individual's future life, depending on the successes, happiness, and joys experienced in his past academic life. The basis of optimism is based on positive psychology and social-cognitive theory. Knowing the basic

principles of these theories can facilitate understanding the concept of academic optimism. In this direction, the concept of academic optimism is explained in the context of positive psychology and social-cognitive theory.

Academic optimism as a construct was shaped using Bandura's Triple Reciprocal Structure (Hoy, Tarter, & Woolfolk Hoy, 2006). In order to explain academic optimism, which is considered an organizational variable, the components of collective efficacy, intellectual emphasis, and trust in students and parents were defined. Collective efficacy is shaped by the personal characteristics and perceptions of the employees in a school. The trust of school staff in parents and students affects the expectation of optimism. On the other hand, the academic emphasis is the behaviors elicited by these emotions to focus on student achievement.

Academic optimism can be both a teacher's and a school's characteristics (Kurz, 2006). A teacher with academic optimism believes that her students will succeed. These teachers have strong professional efficacy beliefs and contribute to the success of their students by using their skills. These teachers believe that they can get the support of both the student and the parents in the teaching process. They think every student can succeed (Beard et al., 2010). In schools where academic optimism is dominant, there is a strong sense of trust between teachers, students, and parents (McGuigan & Hoy, 2006). In these schools, students are allowed to overcome difficulties. Appropriate classroom environments are created for students to gain feelings of trust and empathy (Hoy et al., 2008). Academic optimism is among the common characteristics of successful schools.

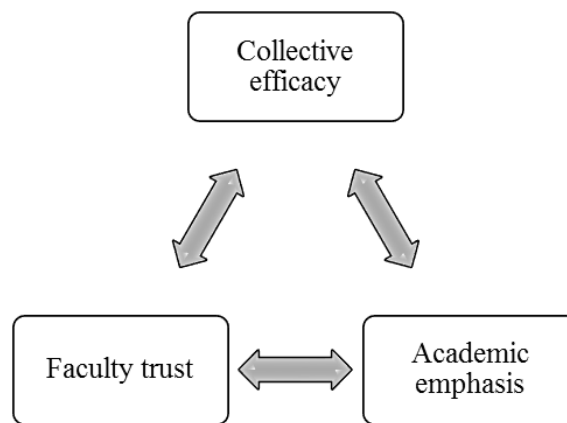


Figure 2. Academic Optimism Conceptual Framework (Hoy et al., 2006)

Social cognitive theory, pioneered by Bandura (1997), provided a theoretical framework for studies on collective efficacy. The social cognitive theory claims that the individual has the power to control his behavior. Self-efficacy is an essential concept in social cognitive theory explanations. This concept refers to the belief in their ability to organize and exhibit the behaviors necessary to achieve a specific goal. Self-efficacy affects the motivations, emotional states, and behaviors of individuals. Depending on this situation, self-efficacy has an essential role in predicting the future behavior of individuals (Bandura, 1997).

People often work together to achieve common goals. To achieve common goals in the working environment, the collective competencies of individuals are also essential, along with their self-efficacy. Collective efficacy is

a group's shared belief in their ability to act in a way that produces predicted levels of attainment (Bandura, 1997). This belief is the product of the interactive dynamics of group members and provides an opportunity to understand how groups or organizations choose to act.

Collective efficacy perceived in schools represents the group's judgments about the performance ability of the social system as a whole (Bandura, 1997). Teachers have efficacy beliefs about themselves and the school. Perceived collective efficacy is teachers' judgment that school staff can organize and carry out the necessary actions to positively impact students (Hoy, Tarter, & Woolfolk Hoy, 2006). Bandura (1997) examined the relationship between the sense of collective efficacy and academic school performance by controlling the socio-economic situation. Schools with a strong sense of collective efficacy have been observed to make significant academic progress.

On the other hand, schools with severe doubts about their collective proficiency did not significantly improve their academic achievement. Some studies have shown that collective efficacy substantially impacts students' academic achievement. Goddard, Hoy, and Woolfolk Hoy (2000) tested the role of collective efficacy in increasing school success in primary schools. It has been determined that perceived collective efficacy increases student achievement in mathematics and reading.

It has been observed that a total of 25 postgraduate theses on academic optimism were prepared between 2010 and 2022 in Turkey. Six of these theses are at the doctoral level. In the studies, academic optimism is constructivist learning, leadership, organizational cynicism, psychological well-being, success, organizational commitment, self-efficacy, professional burnout, stress, resilience, professional self-esteem, job satisfaction, corporate learning level, political competence, and teacher autonomy. They are discussed together with concepts such as emotional intelligence and school culture. In studies conducted in Turkey, the relationship between leadership styles and academic optimism has been further examined.

Conclusion

Positive psychology and social cognitive theory allowed the development of the concept of optimism and the formation of its theoretical background. The triple determinism model of social cognitive theory has been used to explain social relations in education as in many other areas. To understand teacher behaviors in schools and to determine the effect of these behaviors on success, the triple reciprocal determination model was used. In these studies, the concept of academic optimism was mentioned. It consists of academic optimism, collective efficacy, student and parent trust, and academic emphasis. Collective efficacy reflects teachers' belief that they can act together and accomplish tasks to achieve the school's goals. Studies have shown that students are more successful in schools with high academic optimism. Studies can be conducted to explain the relationship between academic optimism and student success, as well as with variables such as motivation, self-regulation, and drop out.

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Factors Preventing Hiring of Highly Educated Female New Graduates in Japanese Corporations

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Abstract: The main purpose of this study is to find the attributes of corporations that prevent hiring of highly educated female new graduates, who hold bachelor's or master's degrees. Our results show that the percentages of new graduates who majored in the field of humanities and of female employees positively correlate with the percentage of female new graduates, suggesting that corporations with many female employees also have a high percentage of hiring female graduates. Furthermore, the percentage of female managers and the presence of labor unions also tend to be positively significant on hiring percentage of female new graduates. However, we identified the two important factors as a hindrance to hiring new female graduates in Japanese corporations: (1) the tenure years of female employees and (2) the percentage of employees working overseas. Although the promotion of female employees is on the rise in Japan, these findings indicate that the positions of female employees are still limited within gender-specific jobs or positions that do not require a business trip or relocation. A closer focus on these issues should be warranted in future studies.

Keywords: female new graduates, highly educated graduates, career-track positions

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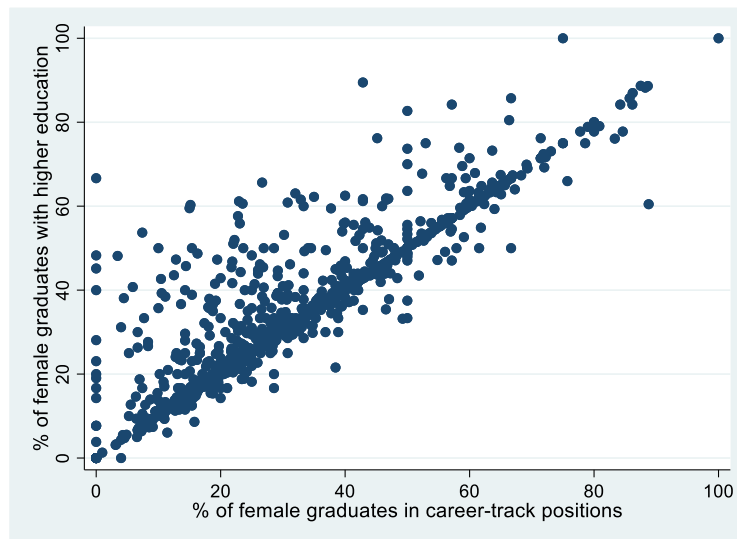
Introduction

In Japan, the promotion of active social participation of female workers has been on the rise, and a growing body of empirical studies from the perspective of economics, management, sociology, and others has been steadily accumulating. Some of these studies have examined the recruitment and retention rate of new graduates while focusing on gender differences (Fujimoto 2005, Urasaka and Okusa 1996, Yamamoto 2014, Yasuda and Araki 2014, Yoneda 2015, Yoshida 2020). Unlike other developed countries, most Japanese companies employ a unique hiring system in which a single batch of new graduates, who left universities in March, are hired in a single sweep in April. In addition, this collective recruitment is usually divided into two courses in corporations: general and career-track employment.

The main purpose of this study is to find the attributes of corporations that prevent hiring of highly educated female new graduates, who hold bachelor's or master's degrees. The notable contributions of this study are the following. First, in addition to the basic attributes of corporations, the analysis includes variables not addressed in previous Japanese studies, such as variables related to human resource policies, the status of diversity-related initiatives, corporate performance, and research and development (R&D) expenditures. Second, the factors affecting the proportion of hiring of female new graduates exclusively to career-track positions are also investigated.

Materials and Methods

Data used in the analysis are a matched dataset of the Quarterly Employment Report General Edition, Quarterly Employment Report Women's Edition, CSR Company Overview (Employment and Human Resources Utilization Edition), and Company Quarterly Report (Capital Expenditure and R&D Expenditure) published by Toyo Keizai Incorporation. The information concerning the variables is mainly obtained from the data for 2019. The dependent variables are the hiring rate (%) of highly educated female new graduates with an undergraduate or master's degree and the proportion of hiring of female new graduates for career-track positions. These figures are calculated for those who graduated in March 2020 and were collectively hired by the corporations in April 2020. The method used for the analysis is ordinary least squares. The explanatory variables are divided into the following four factors: (1) basic attributes such as the percentages of female employees and of executives in the corporation (Model 1); (2) variables related to internal human resource policies, such as whether the company has introduced performance-based management (Model 2); (3) variables indicating human resource diversity, such as the percentage of corporations hiring foreign employees (Model 3); and (4) variables related to corporate performance, such as ordinary profit and capital investment costs per employee (Model 4).



Correlation coefficient = 0.886.

Figure 1. Relationship between the Proportion of Female Graduates (%) with Undergraduate or Advanced Degrees and Their Employment in Career-Track Positions

The average hiring percentage of highly educated female graduates among all educated graduates is 33.347% whereas that of female graduates among graduates in career-track positions is 30.506%. The relationship between these two dependent variables is plotted in Fig. I. Although the correlation coefficient of 0.886 is considered a very strong correlation, the percentage of highly educated female graduates is even slightly higher than the percentage of female graduates in career-track positions. This suggests that the percentage of those who do not choose career-track employment is higher among female than among male graduates.

Results

We present our estimation results in Tables I–IV. The explanatory variables for all the estimations include the percentage of all recruits with an undergraduate degree or higher who majored in the field of humanities, the percentage of female employees, and the percentage of the average tenure years of female employees relative to the average tenure years of male employees. This is because these variables can be considered important factors affecting the percentage of female hires. The dependent variables are analyzed separately in two categories:

- (1) the percentage of female graduates with bachelor's or master's degrees, and
- (2) the percentage of female graduates employed in career-track positions.

1) Model 1: Basic Attributes of Corporations

Table I shows the results of the analysis using the basic attributes of the company as explanatory variables. In estimation (1), the percentages of new graduates who majored in the field of humanities and of female employees are positive and significant at $p < 0.01$, suggesting that corporations with many female employees also have a high percentage of female graduates. In addition, the existence of labor unions significantly increases the hiring percentage of highly educated female graduates by 3.567%, indicating that labor unions favor hiring of such females.

However, the percentage of tenure years for female employees is negative and significant at $p < 0.01$, confirming that the corporations having existing female employees with longer tenure years tend to curb hiring of female new graduates. This suggests that personnel quantitative adjustments may have taken place within the same gender group. In addition, the percentage of overseas workers is negative and significant, confirming the tendency of corporations that have expanded to overseas to employ more male graduates.

In estimation (2), the percentage of female managers is positive and significant. This suggests that corporations with more female managers are also more proactive in hiring female graduates for career-track positions, who are expected to assume future managerial positions. The effect of labor unions is greater when exclusively focusing on career-track positions, significantly increasing the percentage of female graduates by 5.607%. In contrast, the percentage of overseas employees is more negatively related with the percentage of female in career-track positions. Corporations with more employees overseas are likely to recruit male graduates more

actively for their career-track positions. Furthermore, this may also be the effect of more male students applying to these corporations.

Table 1. Effects of Basic Attributes of a Company

Variables	(1)Highly educated	(2)Career-track
% of highly educated graduates with a humanity degree	0.146 (0.033) ***	0.088 (0.041) **
% of female employees	0.432 (0.106) ***	0.211 (0.129)
% of female tenure years to male tenure years	-0.217 (0.048) ***	-0.196 (0.052) ***
% of female in manegerial positions	0.230 (0.155)	0.643 (0.174) ***
% of married female employees	0.015 (0.081)	0.034 (0.081)
Labor union	3.567 (1.649) **	5.607 (1.851) ***
Starting salary	0.649 (0.465)	0.071 (0.488)
Average overtime hours per month	-0.179 (0.076) **	-0.171 (0.090) *
Average paid leave days per year	0.347 (0.226)	0.390 (0.244)
% of females taking child-care leave	0.264 (0.201)	0.158 (0.212)
% of males taking child-care leave	0.558 (0.563)	-0.166 (0.737)
% of employees working overseas	-0.652 (0.139) ***	-0.811 (0.133) ***
Intercept	12.354 (12.220)	24.330 (13.632) *
R-squared	0.477	0.360
Number of observations	417	417

Note: ***p < 0.01, **p < 0.05, *p < 0.1. Robust standard errors in parentheses.

2) Model 2: Corporate Human Resource Policies

Table II shows the results of the analysis using in-company systems such as personnel policies as explanatory variables. It is evident that these measures do not significantly affect the percentage of female hires in both analyses. A hypothesis that the creation of a comfortable working environment increases the proportion of hiring in female workers is plausible, but this is not supported by our estimation.

3) Model 3: Human Resource Diversity

Next, Table III shows the results of the analysis using the variables related to human resource diversity as explanatory variables. The hiring percentage of employees with disabilities has a positive and significant effect

in estimation (1). However, in estimation (2), having a basic lesbian, gay, bisexual, and transgender (LGBT) policy is positively significant at $p < 0.1$. Although there is no strong correlation, this suggests that corporations that value diversity are more proactive in hiring female graduates. The fact that the percentage of foreigners is not significant is consistent with the results of Model 1, which shows that corporations expanding their operations overseas are more likely to hire male graduates.

Table 2. Effects of Corporate Personnel Policies

Variables	(1)Highly educated	(2)Career-track
Performance-based pay system	-3.773 (4.653)	-4.047 (4.529)
Allowance attached to a post	-0.640 (1.183)	-0.335 (1.337)
Human resource development system using employee input	0.748 (1.313)	2.059 (1.739)
Flextime system	2.674 (1.591)	1.765 (1.941)
Teleworking system	2.376 (1.646)	2.778 (2.003)
Allowed to supplement income with a side job	0.662 (1.247)	1.745 (1.410)
Re-employment system	1.669 (1.568)	2.240 (1.779)
Intercept	16.528 (5.980) ***	17.484 (6.545) ***
R-squared	0.520	0.343
Number of observations	348	348

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses.

Table 3. Effects of Diversity

Variables	(1)Highly educated	(2)Career-track
% of foreign employees	-0.138 (0.094)	-0.138 (0.087)
% of employees with disability	2.182 (0.531) ***	0.450 (1.145)
Presence of department for diversity management	2.073 (1.332)	1.919 (1.575)
Basic policy regarding LGBT	0.854 (1.316)	2.938 (1.516) *
Intercept	16.233 (3.505) ***	21.794 (4.235) ***
R-squared	0.481	0.257
Number of observations	314	314

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses.

4) Model 4: Corporate Performance

Finally, Table IV shows an analysis using the figures related to corporate performance as explanatory variables. Consolidated ordinary profit per employee and the two other variables are not significant in both estimations. For corporate performance, a simple regression analysis is significant at $p < 0.01$, but multiple regression analysis is unable to yield significant results due to the correlation between explanatory variables such as the number of female employees and capital investment, among others.

Table 4. Effects of Corporate Performance

Variables	(1)Highly educated	(2)Career-track
Consolidated ordinary profit per employee	-0.110 (0.161)	-0.269 (0.192)
Consolidated capital investment per employee	0.127 (0.170)	0.222 (0.184)
Consolidated research and development cost	1.219 (0.759)	1.221 (0.840)
Intercept	18.044 (3.472) ***	19.202 (3.710) ***
R-squared	0.499	0.345
Number of observations	310	310

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses.

Conclusions

This paper examines the relationship between the hiring percentage of highly educated female graduates and attributes of corporations in Japan. Remarkably, we identified the two important factors as a hindrance to hiring new female graduates in Japanese corporations: (1) the tenure years of existing female employees and (2) the percentage of employees working overseas. Although the promotion of female employees is on the rise, these findings indicate that the positions of female employees are still limited within gender-specific jobs or positions that do not require a business trip or relocation. A closer focus on these issues should be warranted in future studies.

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University Students' Perceptions about the Educational Videos on YouTube

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Abstract: YouTube is a Web 2.0 technology-based social media platform that enables users to produce and share their own videos as well as watch and interpret other users' video materials. The purpose of this study is to determine how university students perceive educational video clips shared on YouTube and whether their perceptions differ across some demographic variables. The study was designed as a survey research within the quantitative research paradigm. The sample of the study was made up of 125 university students attending at a major state university in Turkey. Data were collected through an online questionnaire including demographic information form and an 11-item opinion scale for the use of YouTube videos as educational material obtained from the related literature. As a result of the study, it was found that participating university students generally agreed the potential motivation and contribution that YouTube educational videos provide to their learning. In addition, students' perceptions were found to be independent of their gender, age, grade level, program type, and faculty.

Keywords: YouTube, Educational Videos, University Students, Perceptions

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Introduction

In today's information age, technology, information and the individuals who want to reach this information are increasing day by day. On the basis of technological developments, there are both quantitative transformations that increase the capacity of communication and reduce its cost and qualitative changes that bring together individual and mass communication. Social media is one of the most important communication tools among the technological developments in recent years. It is a platform that enables communication, sharing information and producing content using internet technologies, and consists of articles, videos, photos and other materials created by individuals (Dilmen, 2007). Therefore, the ability of an individual to create, comment and contribute

to the content of the media makes social media different from traditional media. Being a Web 2.0 technological environment, social media contains five key characteristics as participation, openness and barrier-free access, two-way conversation, community, and connectedness (Mayfield, 2008). Facebook, Twitter, Instagram and YouTube are among the most popular social media platforms where various content such as text, audio, image and video are shared.

Founded in 2005, YouTube is an online video sharing platform where users can share their own videos, and watch and comment other users' videos (Bostancı, 2010; Yıldırım & Özmen, 2011). Although there are certain categories for uploading videos, YouTube does not limit the content except for illegal materials. For some content, it is required to be over 18 years old. Generally, content such as video clips, television clips, music videos, video blogs, short original videos, and educational videos are published. Since video is a multi-sensory information transmission medium that can record both video and audio, it has important advantages. For instance, educational videos support individual learning, increase student interest and motivation, demonstrate complex subjects, explains dynamic changes and movements with sounds and images, demonstrate the use of tools or equipment, move to the desired part of the topic faster, are easy to acquire, use, reproduce and store and can be watched anytime and anywhere (Akerson et al., 2018; Bektas & Oguz Unver, 2022; Ergin, 1995; Gunel & Top, 2022; Hartsell & Yuen, 2006; Massner, 2022; Qi, 2021; Shukla & Mcinnis, 2021; Solé-Llussà, Aguilar, & Ibáñez, 2022; Yıldırım & Özmen, 2011).

As it is known, social media platforms have a large number of users. Videos have an important place among the elements in these environments. Video sharing sites, which emerged from the idea of sharing the videos that people created with their own means, have gained a popular place with their search and display features (Emiroğlu, 2007). According to the prior research, YouTube is not used for a single purpose. It is used for such purposes as increasing knowledge, spending spare time, following the popular ones, producing and sharing own content with other people, interacting with other people, having fun, etc (Arklan & Kartal, 2018). Akınç (2019) conducted a study on university students' motivation to watch YouTube channels and found that they usually use for purposes such as having fun, watching photos, videos, listening to music.

Social media is also widely used by students in terms of the age group it addresses, and students spend a lot of time especially on video sharing sites. For this reason, educational institutions can publish educational videos on video sharing sites so that students' video watching habits can be used for educational purposes can benefit from these videos (Alakurt, Kahraman & Mazman Akar, 2016). In the study conducted by Bolat (2014), it was observed that video technology is one of the biggest factors affecting learning. It was determined that the success in video-assisted teaching was higher than in the traditional classroom environment. In her study on the design and development of an educational video portfolio environment, Altıok (2018) investigated the effects of videos on the metacognitive awareness levels of foreign language students. He found that using Kinect-based videos was more effective than traditional training.

Although videos have such educational potential, students' perspectives on videos are also important for their

implementation. Balaman (2018) found that students less preferred the videos that were less than 5 minutes and more than 30 minutes; the narrator's voice tone, diction and pronunciation were important for watching the video; and the quality of the sound and image had an impact on the increase of the video watching rate of the students. Therefore, the purpose of this study is to determine how university students perceive educational video clips shared on YouTube and whether their perceptions differ across some demographic variables.

Method

This study was designed as a survey research within the quantitative research paradigm. Survey research is often used to describe the prevalence of a condition and its distribution within a population. It has three approaches as sample descriptive, cross-sectional, and longitudinal (Mertens, 1998). This study employed cross-sectional approach as it aimed to determine how university students as a sample population perceive educational video clips shared on YouTube and whether their perceptions differ across some demographic variables including gender, grade level, program type, and faculty.

The population comprised university students attending at a major state university in Turkey during the 2020 Spring semester. Using a convenience sampling, the researchers formed a sample group of 125 students. The questionnaire form was designed as an online form and distributed to university students via WhatsApp groups and social media platforms. The sample was made up of those students who volunteered to participate and complete this online form.

The first section of the online questionnaire form contained some questions asking for participants' demographic characteristics. The second section included 11 items adopted from previous studies investigating students' views on the videos developed for educational material and shared on the YouTube site (e.g., Alp & Kaleci, 2018; Lai, 2013). Sample items were: "Educational videos on YouTube help me understand the subject", "I think YouTube video lessons have increased my success level" and "I find YouTube video tutorials boring". Participants were asked to rate these items using a 5-level Likert-type measure where "strongly disagree=1" and "strongly agree=5".

Results

As far as the demographic characteristics of the participants were concerned, 32% of them were male and 68% were female (n=125). The participants were distributed according to their class levels as 18% for freshman, 10% for sophomore, 26% for junior and 46% for senior. The greater part of them (96%) registered to undergraduate degree programs whereas a small proportion (4%) registered to associate degree programs. While the majority of them (78%) were students in the faculties related science and engineering fields, the remaining were as follows: social sciences (13%), health sciences (3%), and sports and fine art sciences (6%). The ages of the participants differed from 18 to 37 and the mean age was 22.18 years (SD=2.80).

Table 1 summarizes the descriptive statistics for 11 items regarding participating students' perceptions about the educational videos on YouTube. Considering the average scores, participants agreed with the statements like "Being able to repeat the topic with video lessons on YouTube helps me learn" (Mean=4.02, SD=1.07), "Educational videos on YouTube help me understand the subject" (Mean=3.95, SD=1.08), "Educational videos on YouTube provide opportunity to learn at my own pace" (Mean=3.84, SD=1.15), "I think the video lessons on the YouTube improve the quality of teaching" (Mean=3.61, SD=1.25), "Video lectures on YouTube make topics interesting" (Mean=3.38, SD=1.32), "Video lessons on YouTube make teaching more effective" (Mean=3.34, SD=1.29), "I think the teaching with the Video lessons on the YouTube is enjoyable" (Mean=3.30, SD=1.25), "I think YouTube video lessons have increased my success level" (Mean=3.26 SD=1.22). They were undecided about the statement "I can also learn what I learned from the video lessons on the YouTube site by reading a book or the text on a computer screen" (Mean=2.95, SD=1.20) and they disagreed with the statements "I find YouTube video tutorials boring" (Mean=2.40, SD=1.15) and "It is unnecessary to teach the subjects by preparing video lessons on YouTube" (Mean=1.95, SD=.96).

Table 1. Participants' Perceptions about Educational Videos on YouTube

Item	Mean	SD
It is unnecessary to teach the subjects by preparing video lessons on YouTube	1.95	.96
Being able to repeat the topic with video lessons on YouTube helps me learn	4.02	1.07
I think the video lessons on the YouTube improve the quality of teaching	3.61	1.25
Video lectures on YouTube make topics interesting	3.38	1.32
Educational videos on YouTube help me understand the subject	3.95	1.08
Educational videos on YouTube provide opportunity to learn at my own pace	3.84	1.15
I can also learn what I learned from the video lessons on the YouTube site by reading a book or the text on a computer screen	2.95	1.20
I find YouTube video tutorials boring	2.40	1.15
I think YouTube video lessons have increased my success level	3.26	1.22
Video lessons on YouTube make teaching more effective	3.34	1.29
I think the teaching with the Video lessons on the YouTube is enjoyable	3.30	1.25

In order to investigate whether the participants' perceptions differed according to demographic variables, the items in Table 1 were initially subjected to exploratory factor analysis to determine their factorial structure as well as to form a composite variable. Prior to principal component analysis, the suitability of collected data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was .85, exceeding the recommended value of .60 and Bartlett's test of sphericity reached statistical significance (Chi-Square=858,57, df=55, p<.01), supporting the factorability of the correlation matrix (Pallant, 2007). An inspection of the screeplot (Figure 1) revealed a clear break after the first component, suggesting a one-factor solution explaining a total of 55% of the variance. All items were remained in the single factor as their absolute factor loadings values, which varied between .33 and .87, were greater than the common cutoff score of .30 in the literature. After three negative items were reverse-scored, all items were summed to create a composite variable to represent participants' overall

perceptions about the educational YouTube videos (Mean=39.39, SD=8.47) and to use in the following analyses.

An independent samples t-test (Table 2) showed no significant differences in participants' overall perceptions about the educational YouTube videos by gender [$t_{(123)}=-.29, p>.05$]. Similarly, another independent samples t-test (Table 3) showed no significant differences in participants' overall perceptions by their program type [$t_{(123)}=.92, p>.05$].

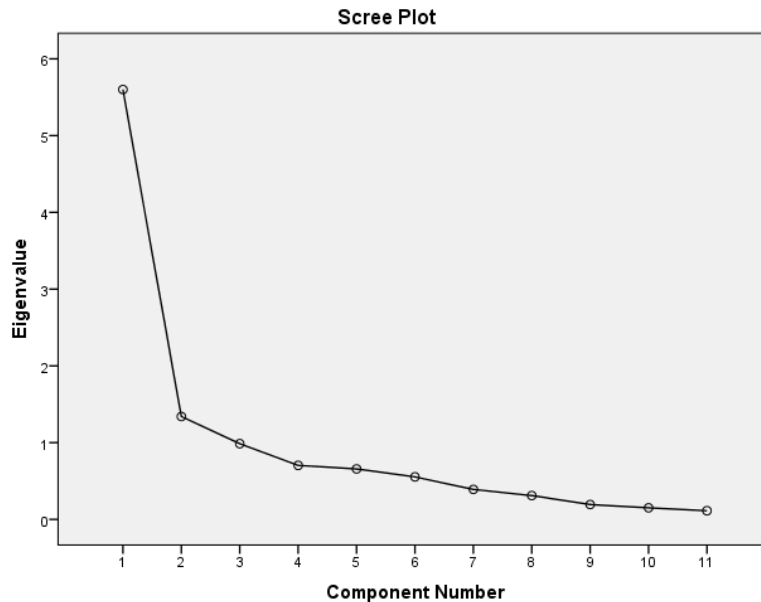


Figure 1. Screeplot of the Perception Items

Table 2. Comparison of Participants' Perception by Gender

Gender	N	Mean	SD	t	p
Male	40	39.06	9.86	-.29	.78
Female	85	39.54	7.79		

Table 3. Comparison of Participants' Perception by Program Type

Program type	N	Mean	SD	t	p
Associate degree	5	42.80	5.59	.92	.36
Undergraduate degree	120	39.25	8.56		

A one-way between-groups analysis of variance (ANOVA) test (Table 4) indicated no significant differences in participants' overall perceptions about the educational YouTube videos by faculty type [$F(3, 121)=.59, p>.05$]. Similarly, another ANOVA test (Table 5) revealed no significant differences in participants' overall perceptions about the educational YouTube videos by grade [$F(3, 121)=2.46, p>.05$]. On the other hand, the relationship between participants' perceptions and age was investigated using Pearson product-moment correlation coefficient. The findings indicated no significant correlation ($r=.17, p>.05$).

Table 4. Comparison of Participants' Perception by Faculty Type

Faculty type	N	Mean	SD	F	p
Science and engineering	98	39.80	8.21		
Social sciences	16	37.50	10.69	.59	.63
Health sciences	4	41.25	3.30		
Sports and fine art sciences	7	37	9.00		

Table 5. Comparison of Participants' Perception by Grade Level

Grade level	N	Mean	SD	F	p
Freshman	22	37.27	8.72		
Sophomore	12	34.75	9.98	2.46	.07
Junior	33	41.39	7.48		
Senior	58	40.01	8.27		

Conclusion

This study shows that participating university students generally agree the potential motivation and contribution that YouTube educational videos provide to their learning. They think that teaching become more effective as they can learn the topics from YouTube at their own pace and repeat them as much as they want and education becomes more enjoyable with the support of educational videos with visual materials. In addition, students' perceptions are independent of their gender, age, grade level, program type, and faculty. With the spread of online or blended courses today, it is known that videos are one of the most widely used educational course materials in learning-teaching processes. When educational videos are prepared in accordance with cognitive theories and presented to the student at an appropriate level, teaching can become meaningful, enjoyable and of high quality. Therefore, this research suggests that educational institutions should provide students with more and educational videos on a variety of topics through YouTube.

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Historical Evolution of Anti-Epidemic Measures in Republican Guangzhou: A Textual Analysis Based on Historical Resources

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Abstract: In the context of the recent COVID-19 epidemic outbreak, the study of public health history is becoming a popular research topic. As one of the birthplaces of public health in modern China, the city of Guangzhou in the Republic of China left a rich historical legacy through a series of exploratory anti-epidemic practices. In this study, data of historical resources related to anti-pandemic measures in Republican Guangzhou from 14 historical archival databases are used as research objects. After data cleaning and word separation using natural language processing (NLP) techniques, the processed data are coded at 3 levels by applying the method of grounded theory, and 3 first-level genera are categorized as behavioral subjects, diseases and measures. The study then conducts a time series analysis to classify the historical evolution of the epidemic in Republican Guangzhou into stages. Based on this, the study explores and compares the stage characteristics of anti-epidemic measures in Republican Guangzhou through social network analysis (SNA) and summarizes its overall characteristics. The study shows that the epidemic in Republican Guangzhou was concentrated in 4 time nodes, and the anti-epidemic measures can be divided into 4 historical evolutionary stages, and its overall performance is as follows: the Health Bureau assumed the primary responsibility for anti-epidemic affairs, and prevention accounts for the largest scale of specific measures. Ultimately, the study justifies the results of the textual analysis based on the summary of relevant statistical information and basic historical facts in the government documents of Republican Guangzhou. This study explores a feasible method for studying the history of public health through textual analysis and provides a new path for the study of the history of public health in early modern China.

Keywords: Republican China, Anti-Pandemic Measures, Historical Resources, Textual Analysis, Social Network Analysis

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Introduction

Since the end of 2019, the COVID-19 pandemic has impacted the world public health system, and then caused a

series of negative effects on the global economic and political stability. After 2021, the types and branches of new infectious diseases have further increased, including new strains of the coronavirus, monkeypox and unexplained acute hepatitis in children. In 2021, the World Health Organization (WHO) detected 421 major public health incidents, of which 265 (63%) were related to infectious diseases, involving 233 countries and regions; In addition to COVID-19, the top five infectious diseases affecting countries and regions are COVID-19 (233), monkeypox (51), measles (45), dengue fever (37) and cholera (23). Infectious diseases with high mortality are Ebola virus disease, Middle East respiratory syndrome, Rift Valley fever, Lassa fever and Crimean-Congo hemorrhagic fever. The new public health pattern brings severe challenges to global health governance, which makes many people focus on the hot topic of “epidemic prevention and control”, and then try to seek historical experience.

Guangzhou is one of the cities with the most complete public health information in modern China, and it is also the earliest city in China to issue public health publications: *The Essentials of Health*, written by Dr. John Glasgow Kerr, was published in Guangzhou in 1875, and is the earliest modern public health work in modern China. In 1908, after graduating from South China Medical College of Canton Hospital, Mr. Leung Pui Kee, a medical elite, founded a monthly *Medicine and Health* in Guangzhou, the first public health newspaper in China. Therefore, the author has a strong interest in the evolution of modern epidemic prevention in Guangzhou.

By the means of consulting the literature and other relevant historical materials, the author found that Guangzhou, as one of the hub cities with high population density and strong mobility of people, had an endless number of infectious disease cases, and the epidemic prevention measures were carried out accordingly. In modern times, the practice of epidemic prevention in Guangzhou began with the promotion of epidemic disasters in the late Qing Dynasty and was fully launched in the period of the Republic of China, which is obviously a very important period for the epidemic prevention and control in modern Guangzhou. Fortunately, due to the long existence of the National Government in Republican Guangzhou, the materials in that period also had relatively good temporal and spatial continuity. Therefore, the author decided to further consult the relevant information and carry out deeper research.

The objective of this study is to roughly determine the time period of concentrated distribution of the epidemic in Republican Guangzhou through methods such as analyzing, inducing and summarizing the relevant historical documents, combining with the epidemic data in the first-hand statistics like the *Guangzhou Yearbook*. After that, the study will divide the periods of concentrated epidemics in Republican Guangzhou via combining other factors in the historical resources and analyzing the characteristics of each stage. Finally, the period of concentrated distribution of epidemic in Republican Guangzhou, the historical stages of epidemic prevention and control in Guangzhou at that time and their overall and staged characteristics will be taken as the research conclusions. Based on this, the possible basis for conclusions of this research as well as its enlightenment to contemporary epidemic prevention and control will be discussed with reference to historical facts.

Background

Literature Review

Although health historical materials in Republican Guangzhou is abundant, generally speaking, only a few studies on the history of public health in Guangzhou at that time have been conducted. In 1978, when the researchers in the History Research Office of the Institute of Philosophy and Social Sciences of Guangdong Province compiled the *Chronicle of Sun Yat-sen*, they combed and examined the history of public health in Republican Guangzhou for the first time. Since then, according to the author's search, a total of 368 studies on the history of public health in Republican Guangzhou have online archives. Among them, the research on epidemic prevention and control measures in Guangzhou during that period is particularly rare. By specifying the search strategy, the author screened a total of 368 search results from 6 databases: CNKI, Wanfang, CQVIP, JSTOR, ProQuest and WoS, and obtained 28 relevant systematic research documents. Then, cluster analysis and co-word analysis were carried out on the 28 literatures by CiteSpace software, and the results are as follows.

Visi...	Co...	Ce...	Year	Cited References Key...
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<input checked="" type="checkbox"/>	4	0.00	2014	民国
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Figure 1. Keyword Analysis of Systematic Research Literatures Related to Anti-epidemic History in Republican Guangzhou

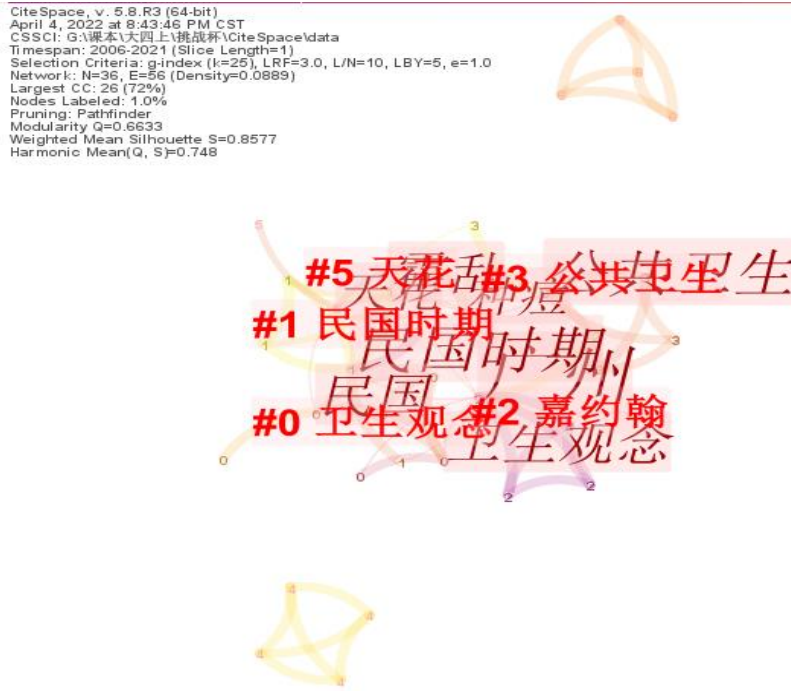


Figure 2. Keyword Clustering Analysis of Systematic Research Literatures Related to Anti-epidemic History in Republican Guangzhou

From the analysis results, it can be seen that at present, most of the academic researches on the history of public health in Republican Guangzhou are case studies, such as the researches on cholera and smallpox epidemic, and to a large extent, they focused on the level of public health, health concepts and health habits of Guangzhou citizens. In addition, due to the interdisciplinary nature of this subject, the professional backgrounds of the authors studying this subject are quite different, so there is almost no co-citation relationship among them. Among the 28 systematic research literatures, only Liu Guiqi's "Study on Guangzhou's Urban Health Administrative Districts during the Republic of China" is a systematic quantitative research document on the history of infectious disease prevention and control in Republican Guangzhou. In this document, Liu counted the historical data of the area, households, shops, population allocation and medical resources of various health districts in Guangzhou from 1912 to 1949, which were collected by the first-hand statistical materials such as the *Guangzhou Yearbook*, and summarized the changes of the historical statistical data of various health districts in Guangzhou in the form of maps. However, the information source of this article was relatively single, including only the official statistics of Guangzhou municipal government during the Republic of China, which undoubtedly ignored many unofficial historical materials. In addition, this article did not make further research and summary on the evolution of epidemic prevention and control measures in Guangzhou during that period. From the above situation, it can be explained that the historical evolution of anti-epidemic measures in Republican Guangzhou, including the time nodes of concentrated distribution of the epidemic, is a subject that has not yet been studied in the current academic circle.

Based on the increasingly complete modern literature database, as well as the technological development of

Natural Language Processing (NLP), Big Data Analysis and Bibliometrics, in the current information age, the objectivity and accuracy of textual analysis will be improved compared with the traditional empirical historiography research method which basically rely on manpower. Therefore, based on the tools of NLP, Big Data Analysis and Bibliometrics, the author hopes to study the historical evolution of epidemic prevention and control measures in Republican Guangzhou by means of textual analysis, thus helping analyze the historical picture of the formation of life and health insurance mechanism in modern Guangzhou and its restrictive factors, so as to sprinkle some enlightenment to today's health management and epidemic prevention.

Grounded Theory

Grounded Theory is a qualitative research method originally developed by G. Glaser and A. Strauss proposed in 1967. Based on empirical data, this method believes that problems arise naturally from situations. raw data behind a problem or phenomenon require continuous abstraction and conceptualized thinking until concluding a model and theory that can stand up to test. Grounded Theory can effectively avoid the limitations of empirical or priori theoretical models on the programmatic research of collected data in the data paradigm. This method contrasts sharply with the hypothetical deductive model used in traditional scientific research.

The process of encoding raw data is based on Grounded Theory analysis, which is a basic and core process. The main purpose of encoding is to comb and interpret the collected data sets, to construct a meaningful framework, to decompose, conceptualize and recombine them, and to draw relevant conclusions. After collecting data, the Grounded Theory analysis follows three basic steps: open coding, axial coding, and selective coding.

Open coding is the process of naming and categorizing phenomena by densely detecting data, not only by scattering and conceptualizing the collected data, but also by recombining and operationalizing it in new ways. At this stage, the researcher will read the data carefully, look for key events or topics, mark them, and code them as third-level genera. During this process, researchers can create new conceptual bodies without any constraints, or change the original codes in subsequent analysis.

The purpose of axial coding is to discover and establish various organic connections between major and minor conceptual categories, to find the main category from the secondary categories, and to reorganize the scattered data in new ways. In this step, researchers need to organize concepts in the analysis process based on the open coding results to identify the upper concepts as the main category and code them as second-level genera. In doing so, researchers may come up with new ideas and ideas, or they may add new codes.

Selective coding refers to the process of selecting a core class concept among all the discovered class concepts, and through analysis, bringing together the related secondary class concepts to systematically illustrate and validate the relationship between the main class concepts and the secondary class concepts, and filling in the class concept that needs to be improved or developed in the future. In this step, through in-depth analysis of the second-level genera, the researchers understand the relationship between the main categories, extract the core

categories that can coordinate other categories, and code them as first-level genera.

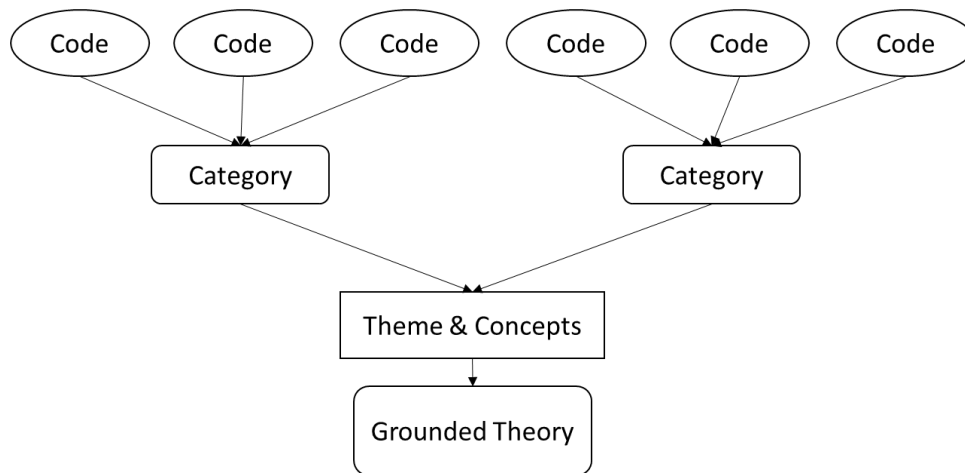


Figure 3. Grounded Theory Pattern Diagram

Due to the strong subjectivity of qualitative analysis, in order to exclude errors brought by subjectivity as far as possible and improve the reliability of the research, it is necessary to test the theoretical saturation. Saturation testing refers to the assumption that the data is saturated when the respondent is no longer able to provide additional information, and no additional information is needed. Some of the raw data can be randomly selected for three-level coding, and the remaining raw data can be used for theoretical saturation testing. When the work of three-level coding is completed, no new concepts and domains are found, and the logical relationship between the categories conforms to the original one, then the saturation test is carried out. Ultimately, through Grounded Theory-based analysis, researchers can identify the core themes that are most important in a research project and can lead other related topics and organize an overall analysis around these core themes.

Multivariate Time Series Similarity Searching

A time series is a series of observations made by one or more variables in chronological order, that is,

$$x_i(t); [i = 1, \dots, n; t = 1, \dots, m],$$

where i is the index of the variable and t is the time. These values can be either specific real values or values that observe the number of events or a particular pattern. When multiple variables get multiple sets of observations in the same time sequence, instantly, a multivariate time series (MTS) is formed. In multivariate time series, the variation of a single variable is often influenced by other variables. Therefore, when you want to quantify and compare multiple multivariate time series, more accurate statistical relationships can be obtained if all variables are included in the research, which involves multivariate time series analysis. In 1976, Box and Jenkins first used the input rate of natural gas as input variable to research the output concentration of carbon dioxide, which extended the time series analysis from univariate to multivariate.

When comparing two multivariate time series, similarity search is a fundamental problem. Similarity refers to determining whether two given time series have similar behavior curves. Similarity search for a time series is to find a time series dataset similar to it from a time series database when a specific time series is specified.

Time similarity search is usually a branch of data mining tasks, but when there is only one multivariate time series in a time series database, this problem is equivalent to the measurement of similarity between two time series. Multivariate Time Series Similarity Searching in this scenario has long been an unsolved issue in academia until 2014, K. Mikalsen et al. found that the similarity of two time series can be estimated using the following methods: first, the measure X_0 of two known multivariate time series is determined by an appropriate similarity measure, then, with a reasonable control variable method set, a quantitative random multivariate time series is generated, and the same similarity measure is used. Measure the similarity measures between these random multivariate time series and the first multivariate time series one by one. These measures are recorded, and Kolmogorov-Smirnov test is performed to determine if they conform to a statistical distribution. This is a nonparametric hypothesis test, in which one-sample K-S test is used to test whether a set of samples comes from a probability distribution, and two-sample K-S test is used to compare whether the two groups of samples have the same distribution. That is, assuming there are observations $\langle X_1, X_2, \dots, X_n \rangle$, denoted as $\{X_n\}$, which are supposed to come from a distribution P , K-S test is used to test the hypotheses that "H0: samples come from P " and "H1: samples do not come from P ". After K-S test, if it is clear that the above similarity measure column $\{X_n\}$ conforms to a statistical distribution, the similarity of two multivariate time series can be estimated by calculating the value of the probability density function of the distribution at $X=X_0$.

Among the above methods, the most important indicator is an appropriate measure of similarity. Currently, the major similarity measures applied to multivariate time series are Minkowski distance and its variants, and dynamic time warping (DTW) distance.

Minkowski distance and its variants are calculated using only one distance formula. For the two time series $X=\langle x_1, x_2, \dots, x_i, \dots, x_m \rangle$ and $Y=\langle y_1, y_2, \dots, y_i, \dots, y_m \rangle$, the Minkowski distance between them is shown as:

$$D(X, Y) = \left[\sum_{i=1}^m |x_i - y_i|^p \right]^{\frac{1}{p}}, (p \geq 1)$$

In the formulas mentioned above, if $p=1, 2, \infty$, the formulas of Manhattan distance, Euclidean distance and Chebyshev distance can be obtained in turn.

Minkowski distance and its variants are most commonly Euclidean distance, which is simple, intuitive and easy to calculate. However, the lower computational complexity of these indices means that they require more variables in the sequence: the two sequences that need to be compared have the same length; It is required that the sequence variables must correspond strictly and be sensitive to the point mutations in the time series.

Computing the DTW distance of two sequences is actually to find a mapping path with the smallest distance between them, which is characterized by the fact that one point can correspond to several adjacent points on the other side. DTW measures the similarity of unequal time series by inserting new points into the original sequence to align the two sequences on the time axis. Compared with Minkowski distance and its variants, although computational complexity is high and does not necessarily satisfy the triangular inequality of distance, DTW distance has significant advantages in multivariate time series analysis: it overcomes the problem that variables must correspond strictly and allows asynchronous point-to-point correspondence; allow two sequences to be unequal in length. Therefore, DTW distance is the most appropriate measure of similarity when the two sequences cannot correspond strictly to the variables.

Social Network Theory

Basic Concepts

The Social Network Theory is a theory proposed by the author, whose basic idea is that people in social situations think and act in a similar way because of their relationships with each other. Social network analysis (SNA) based on this theory is a process of investigating social structure by using networks and graph theory. It describes the characteristics of network structure by nodes (personal actors, people or things in the network) and ties, edges, or links (relationships or interactions) that connect them. These networks are usually represented by sociograms, where nodes are represented by points and ties are represented by lines. These visualizations provide a way to qualitatively evaluate a network, reflecting changes in attributes of interest to the research through the visualizations change representations of nodes and edges. At the same time, the various indicators in social network analysis can effectively complement the qualitative research by quantitatively analyzing the characteristics of high frequency words or relationships among groups in the network and help to obtain more complete and valuable research results.

Nowadays, Social Network Theory has become a key theory in sociology and has been applied in different fields such as project management, decision-making research and so on.

Types of Social Networks

Social networks can be classified into several types according to different criteria. It can be divided into one-mode network and two-mode network according to the difference in the set of origin of nodes in the network: in one-mode network, each node is allowed to connect with other nodes; in two-mode network, nodes are divided into two sets and only nodes in different sets can be connected. If the edges of the network are undirected, the network is called undirected network, and vice versa, it is called directed network. If the edges of the network have different weights, the network is called weighted network, and vice versa, it is called unweighted network.

Conduction of Social Network Analysis

At present, social network analysis is generally carried out through SNA software. Common SNA software includes UCINET, Gephi, Pajek, etc. They have their own advantages in the application of social network analysis, but the supported input file formats are much the same. The current common data input formats of SNA software include the following three types: edge list, which includes a list of source nodes, a list of target nodes, and weight, which are the number of cooperation between the two nodes; Node list, which stores the attributes contained in all or part of the node entities in the previous relationship file; The co-occurrence matrix is used to count the number of common occurrences between each two nodes in the data set in the form of a matrix to describe the closeness between nodes. The edge list and node list need to be imported together, while the co-occurrence matrix only needs to be itself as a complete input source.

Evaluative Metrics of Social Networks

The main evaluation metrics in social network analysis methods can be divided into five categories: density metric, reachability metric, structural hole metric, cohesive subgroup metric, and centrality metric. centrality metric. Among them, the first two are macro metrics and the last three are micro metrics.

The density metric includes graph density and average degree. The greater the density of the overall network, the more closely connected the network members are, and the greater the influence of the network on the attitudes and behaviors of the actors in the network. The formula for calculating the network density D in a directed network is:

$$D = \frac{m}{n(n-1)}$$

Where m is the total number of edges that actually exist, and n is the number of nodes.

The average degree is the number of edges divided by the number of nodes. This metric can be used to reflect whether the cooperation between nodes in the network is efficient or not.

The reachability metric is the diameter, the average path length, and the average clustering coefficient. Diameter is the length of the longest geodesic line in the network graph. The shorter the diameter, the shorter the intermediary points and steps for information diffusion to the whole network. The expression of diameter d is:

$$d = \max_{i,j} d_{ij}$$

where d_{ij} is the number of edges on the shortest path connecting two nodes i and j .

The average path length is the average distance of the shortest path connecting any two points. the smaller the value of L , the less time and number of transmissions required for information dissemination, and the stronger the interaction and accessibility between network subjects.

The expression of the average path length is given by:

$$L = \frac{1}{\frac{1}{2}n(n-1)} \sum_{i \geq j} d_{ij}$$

where n is the total number of nodes of the network graph.

In particular, according to the small world theory, if the L value of a network does not exceed 10, the network has the small world effect. The small world effect is defined as: if the average distance between any two points in the network increases logarithmically with the number of network lattice points, and the local structure of the network still has a more obvious grouping feature, the network is said to have the small world effect.

The average clustering coefficient is also a metric that can monitor the small-world effect, and it is used to measure the average degree of node aggregation. In general, the larger the value of this metric, the more pronounced the small-world effect of the network.

The structural hole metric identifies which nodes occupy key positions in a social network and analyzes the strength of relationships in those positions. Ronald Burt argues that structural holes provide their occupants with access to "information resources" and "control benefits", thus giving them a competitive advantage over members of other positions in the network. The two most important metrics for this measure are effective size and constraint. The effective size refers to the non-redundant factors of nodes in the network, and the larger the value, the less duplication of the network and the greater the possibility of structural holes; the constraint refers to the ability of nodes to utilize structural holes in the network, and the larger the constraint, the more closed the network it covers and the less the possibility of structural holes.

A cohesive subgroup is a small group in the network with high cohesion each. The cohesive subgroup metric is the result of cohesive subgroup analysis, through which the existence, number, hierarchical structure and membership of subgroups within the network can be understood.

The centrality metric is an important indicator of the "centrality" and "power" of the nodes in a social network. The higher the centrality of a node, the more social resources and information channels it occupies. The indicators of this measure include degree centrality, closeness centrality and betweenness centrality. Among them, degree centrality is the number of other nodes directly connected to a node; if a point is directly connected to many points, then the point has a high degree centrality. In a directed network, degree centrality is divided

into outgoing and incoming degree centrality. Proximity centrality is the reciprocal of the sum of the shortest distances between a node and all other points in the graph. The closer a point is to other points, the less it depends on other nodes to transmit information, and the higher the proximity centrality is. In directed graphs, proximity centrality is divided into outgoing proximity centrality and incoming proximity centrality. Mediation centrality measures the extent to which a node can be a "middleman", i.e., the extent to which it controls others. If a node is between multiple nodes, it can be considered to play an important "intermediary" role, where the person in that position can control the transmission of information and influence the group.

Methodology

Scientific Approach

Based on the preset retrieval strategy, this research constructs a corpus for raw materials from the text data of Guangzhou epidemic prevention and control historical data from 14 historical archives databases, uses word segmentation technology of natural language processing (NLP) to clean the data, and then uses Grounded Theory's encoding method to encode the processed data in three levels, summarizing the three first-level genera of epidemic prevention subject, infectious disease and prevention and control measures. And output coded datasets. Subsequently, the data in the coded dataset is analyzed by time series by year, forming annual trend, subtotal frequency statistic and annual distribution statistical charts for each of the three subclass genera subordinate to the first-level genera. The historical evolution of the in Republican Guangzhou epidemic is divided into phases. On this basis, through social network analysis (SNA), this research explores and compares the stage characteristics of anti-epidemic measures in Republican Guangzhou, and summarizes its overall characteristics. The specific technical route is shown in Figure 4.

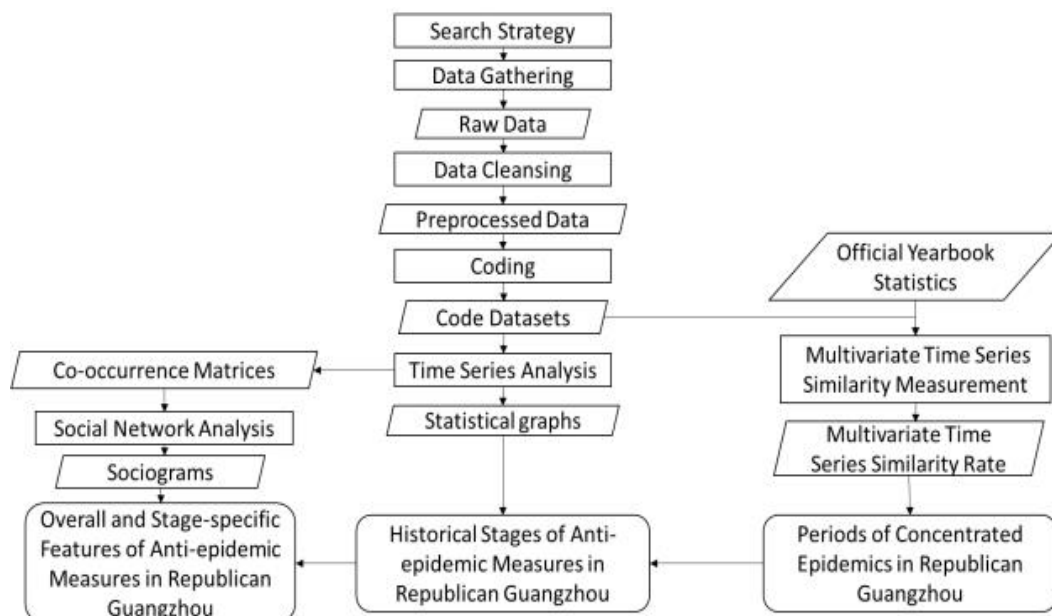


Figure 4. Flow Chart of the Scientific Approach

Scientific Approach

Based on the preset retrieval strategy, this research constructs a corpus for raw materials from the text data of Guangzhou epidemic prevention and control historical data from 14 historical archives databases, uses word segmentation technology of natural language processing (NLP) to clean the data, and then uses Grounded Theory's encoding method to encode the processed data in three levels, summarizing the three first-level genera of epidemic prevention subject, infectious disease and prevention and control measures. And output coded datasets. Subsequently, the data in the coded dataset is analyzed by time series by year, forming annual trend, subtotal frequency statistic and annual distribution statistical charts for each of the three subclass genera subordinate to the first-level genera. The historical evolution of the in Republican Guangzhou epidemic is divided into phases. On this basis, through social network analysis (SNA), this research explores and compares the stage characteristics of anti-epidemic measures in Republican Guangzhou, and summarizes its overall characteristics. The specific technical route is shown in Figure 4.

Search Strategy

The search term design of this research is divided into two parts: disease search term and place search term. The term "epidemic" covers the meanings of modern medicine and traditional medicine, including the definitions of infectious diseases in Western medicine (modern medicine) and epidemic diseases in Chinese medicine (traditional medicine) (also known as febrile disease, epidemic, pestilence, warm disease, plague and seasonal toxin); The disease ranges covered by the two are non-empty intersection, but they are not subsets of each other. The disease keywords used in this research combine the above two definitions of "epidemic". According to the list of legal infectious diseases included in *Guangzhou Yearbook* and *Gazette of the People's Government of Guangzhou Municipality* over the years, and referring to the list of "febrile diseases" included in *Guangdong School of Traditional Chinese Medicine Febrile Disease Handout*, And combine the synonyms and folk names of the above names to determine. The place search term covers all the official titles and alternative names that once appeared in the administrative division of Republic Guangzhou, but does not include the specific place names in the areas under the jurisdiction of Guangzhou in ancient and modern times. Different databases need to adopt corresponding search expressions.

This research selected the historical resources issued between the date when the National Government controlled Guangzhou on January 1, 1912 and the date when Guangzhou was liberated on October 14, 1949. The text sources include newspapers and periodicals, magazine articles, government documents, books, etc. After the preliminary results are obtained by searching according to the search expression designed above, the items with incomplete page content, unable to get full text, illegible handwriting or unable to download will be screened out and excluded. When the content with identical text is repeatedly published by multiple journals, if there is a clear information source, only the information source will be retained; if the information source cannot be found, the article with the earliest publishing time will be retained, and subsequent repeated articles will be excluded.

Data Gathering

After the preliminary search strategy was confirmed, we conducted a literature search in the following 16 database : Sun Yat-sen Library of Guangdong Province, Guangzhou Archives, Peking University Library, National Library of China, VS Zlibrary, Late Qing Dynasty and Republic Period, Library of the Republic of Hanwen, East View, Chinese historical documents·Book Database of the Republic of China, The Republic of China Library Science Literature Database, Full Text Database of Journal (1911-1949) (Shanghai Library), Database of modern Chinese newspapers and magazines (Darling company in Taiwan), Chinese historical documents·Modern Newspaper Database, Database of Basic Ancient Chinese Books (Ai Ruhsheng) , Dacheng Old magazine database, Ancient Resource Database OPAC.

In terms of literature screening and data records, researchers retrieve, review and check the results. When the retrieval result is non-text, the OCR function of Adobe Acrobat is used for text recognition first, and then the correction of the recognition result is made according to the actual content.

After checking, filtering and quality evaluation, the “Book Database of the Republic of China” and “Ancient Resource Database OPAC” were excluded, and the search result datasets were valid from 14 valid databases. The search results were saved as “D1.csv” through Excel records.

Raw data includes 3514 valid entries and 278508 body characters.

Data Processing

Data Cleansing

In terms of data cleaning, the current common tools for Chinese include NLPiR, Weiciyun, Tencent Cloud NLP platform, and Python's jieba library. NLPiR is an open source platform developed by Zhang Huaping, Chinese Academy of Sciences. Its main functions include Chinese word segmentation, keyword extraction, part-of-speech labeling, new word recognition and adaptive word segmentation. The adaptive word segmentation function automatically discovers new feature words based on information cross-entropy and adaptively tests the language probability distribution model of the corpus, thus reducing the occurrence of too few or too many word segmentations.

After testing, we found that jieba had poor word discrimination for text in raw data, while the Weiciyun and Tencent Cloud NLP platforms had slightly weaker word sensitivity for vernacular and early vernacular words, despite their better performance than the aforementioned tools Compared with this, nlpir is better adapted to Chinese texts, especially illiterate and early vernacular texts, and the semantic analysis function is also more complete Therefore, finally we choose NLPiR for data cleaning of raw data.

This research uses the ICTCLAS component of the NLPiR SDK open source project for text word

segmentation. Also, by summarizing *Hit_Stopwords*, *Scu_Stopwords* and *Baidu_Stopwords* and increases or decreases according to the actual situation of the collected corpus. A total of 2694 stop words are sorted out and summarized into a stop words list, which is stored as a text document “stopwordlist.txt”. Then open the ICTCLAS component of the NLP SDK, modify the imported deactivated thesaurus to “stopwordlist.txt”, import “D1.csv”, export the data cleansing table “D2.csv”, and get preprocessed data containing 229369 body characters (82.36%).

Coding

Grounded Theory's third-level coding requires appropriate qualitative analysis tools. Currently, quality analysis software supporting Grounded Theory three-level encoding includes Nvivo, MAXQDA, and Atlas.ti. Among them, Nvivo is suitable for datasets with large amounts of data and uniform format, encoding faster, and has association tools for automatic encoding, which improves the efficiency and accuracy of encoding; while MAXQDA is suitable for moderately sized datasets, it has the advantage of supporting mixed encoding of files in different formats, but it also requires more encoding time. Finally, Atlas.ti is not commonly used at this time because it is slowly updated. To sum up, Nvivo 20.2.0.426 was chosen as the encoding tool in this study.

First, import the first 3000 data (85.37%) of “D2.csv” into Nvivo software, according to Grounded Theory's process, open coding first to get third-level genera; After collating and merging the third-level genera, then axial coding is applied to get the second-level genera. Finally, through selective coding, the redundant information in secondary coding is removed, resulting in 3 first-level genera, 20 second-level genera, and 151 third-level genera. Subsequently, the remaining 514 data were imported into Nvivo software and the above coding process was re-executed, and it was found that there were no new concepts or categories, and the categories conformed to the original logical relationships, which indicated that the results of the three-level coding passed the saturation test. Finally, the coding datasets (code datasets) "code.csv" were output by Nvivo software. There were 19,754 codes in the dataset, including 5,530 codes under "Anti-epidemic Subjects" (A), 11,018 codes under "Anti-epidemic Measures" (B), and 3,206 codes under "Diseases" (C). The coded datasets “code.csv” is output by Nvivo software, with some data as shown in Table 1.

Table 1. Partial Coding Dataset

Year	Source	Type	Date	Author	Title	Text	Core Raw Information Extracted after Text Segmentation	Third-class Genus	Second-class Genus	First-class Genus
1912	卫生 年刊	报刊 杂志	191 2.6. 1	广州市 政府卫 生局	广 州 市 市 政府	民国 开元 (市 政府 院;1-	1-1:市政府;1- 2:设卫生司;1- 3:即拨款...建传染病 院;1-	Aa1;B a1;Ba2 ;Bb1;B c1	Aa;Ba; Bb;Bc	A;B

1912	时报	报刊 杂志	191 2.6. 21	时报	立) ... 传 李树 染 芬为 医 病 司长 院... 本 埠 往 本埠 来 往来 香 ... 港...	4:后则裁司...厅;1- 5:任何氏为警察厅公 2- 1:本埠往来香港广州 等处商轮因疫暂行 停驶	Bd1	Bd	B
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At the same time, save the encoding index in Nvivo as the encoding outline “code.txt”, and get the following encoding table, as shown in Table 2.

Table 2. Coding Outline Schema Diagram

First-class Genus	Second-class Genus	Third-class Genus
A: Anti-epidemic Subjects	Aa: Administrative Subjects Ab: Medical Subjects Ac: Civic Subjects	Aa01: Municipal Government; Aa02: Administrative Staff; Aa03: Ministry of Health; Aa04: Central government; Aa05: Health Bureau;... Ab01: Doctors; Ab02: Nurses; Ab03: Chinese Physicians; Ab04: General Hospitals; Ab05: The Infectious Diseases Hospital;... Ac01: Expatriates; Ac02: Managers of Public Places; Ac03: Citizens;...
B: Anti-epidemic Measures
C: Diseases

Time Series Analysis

Due to the large time span of this study, which includes 38 valid years, it is obviously inappropriate to use dates and months as time units of time series. Therefore, this study uses years as time units to conduct Time Series

Analysis. In addition, there are 94 third-level genera under the first-level genera; “Anti-epidemic Measures” (B), which is in excess of the number. Therefore, for the first-level genera B, its subclass genera should be selected as the subclass genera to be applied to Time Series Analysis. For first-level genera “Anti-epidemic Subjects” (A) and “Diseases” (C), the number of third-level genera is relatively appropriate, and it has explanatory significance as a variable of Time Series Analysis. Therefore, for A and C, we mainly study its third-level genera.

Based on the coded datasets “code.csv”, the researchers used several Excel functions to generate time series statistics tables for each subclass genera under “Anti-epidemic Subjects” (A) and “Diseases” (C) and each second-level genus under “Anti-epidemic Measures” (B), respectively, year by year. Then the annual change table of the total word frequency of the subclass genera mentioned above is calculated. The basic pattern of time series statistics tables is shown in Table 3.

Table 3. Schema Diagram of a Time Series Statistical Table

Year	Gen ₁	Gen ₂	...	Gen _n	Total
1912					
1913					
...					
1949					

At the same time, the subclass genera corresponding encoding related to time series is written as the glossary “subclass.txt”. The glossary and “code.csv” are imported into the Python program “coword.py” which is written in advance, and the coded dataset is extracted by the program. The weight in the co-occurrence matrix of the two subclass genera equals the sum of the number of times they coexist in each record, and so on, a co-occurrence matrix is generated.

After sorting out, this study finally obtains three time series statistical tables: disease word statistical table “C.csv”, anti-pandemic measures statistical table “B.csv” and anti-pandemic body statistical table “A.csv”. At the same time, the co-occurrence matrix “co0.csv” of time series related subgenera and the annual change table “N.csv” of the total word frequency of subclass genera are obtained. Using Microsoft Excel's “Quick Analysis” function, annual trend, subtotal frequency statistics and annual distribution statistical charts for each subclass genera are generated in three time series statistical tables, and annual trend charts for the total word frequency of subgenera related to time series are generated from “N.csv”.

Multivariate Time Series Similarity Measurement

This research collates the epidemic occurrence time and the number of reported cases recorded in Guangzhou government documents: *Guangzhou Yearbook*, *Journal of Municipal Reports of Guangzhou*, *Gazette of the*

Republican Government of Guangzhou Municipality within a defined time period, and obtains the annual infectious diseases data statistical table “yearbook.csv”.

Previously, the researcher has written a python program “dtw.py” to calculate DTW distances based on the measurement principle of DTW distances. When the data of the annual infectious diseases data statistics table is sorted out, the researchers duplicate the table, empty the data, keep its columns and time columns, remove the Total column, and fill the blank cells with the RANDBETWEEN function of Microsoft Excel with random numbers not larger than the total number of cases. Based on this method, 1000 random number tables are generated, and the python program “dtw.py” used to calculate DTW distances is imported into the original table at the same time. The average DTW distances of these 1000 random number tables and the original tables are 385.36 and the standard deviation is 272.00. After recording these 1000 observations, input them into SPSS 26.0, select “one-sample K-S test”, and select “normal distribution” in the “test distribution” option group. Set the original hypothesis that H_0 is “DTW distance does not obey normal distribution”. Finally, the probability of the original hypothesis is 0.0139 by Kolmogorov-Smirnov test. Therefore, 98.61% can be sure that DTW distance D obeys normal distribution and $D \sim N(385.36, 272.00^2)$.

To “dtw.py”, the researcher imported “C.csv” of the disease word data statistical table and “yearbook.csv” of the Yearbook infectious diseases data statistical table, and calculated the DTW distance of two multivariate time series to be 229.68. It can be operated by matlab program, and the normal probability density function has a value of 0.0012 at $x = 229.68$. In summary, The similarity estimate (estimated similarity rate) of the disease word frequency time series and the time series of the annual infectious diseases data can be considered to be 99.88%.

Social Network Analysis

Among the current SNA software, Gephi and UCINET are the two most frequently used software, but their main functions are very different. Gephi supports the drawing of many different types of social network diagrams (sociogram), but its metrics are slightly insufficient, such as the lack of structural hole metrics; meanwhile, UCINET provides powerful metric calculation functions, but the generated network graph visualization is poor. Therefore, the author adopts Gephi 0.9 for network mapping and measurement of some quantitative social network indicators, while UCINET 6.415 is used to supplement the measurement of indicators.

First, the co-word matrix “co0.csv” of time series related subgenera was imported into Gephi and UCINET software as “matrix” respectively. For Gephi, “one-mode”, “directed”, and “weighted” are selected in the interface before generating the network diagram; after importing the data, each node is labeled with “A”, “B”, and “C” according to the first-level genus, so that the data belonging to the three different first-level genus can be distinguished in the network diagram. Subsequently, the word cloud graph and the overall network graph of time series related subclasses were generated, and the overall graph density, average degree, diameter, average path length and average clustering coefficient were recorded. (clustering coefficient). For

UCINET, after importing the cohesive matrix, the new file is saved as "co0.##h" after format conversion and binarization, and the cohesive subgroup metric of the whole network is measured by the N-Clan method, and the effective size of each node is recorded. effective size, constraint, degree centrality, closeness centrality, and intermediacy centrality of each node were recorded.

After dividing the k historical stages of epidemic prevention and control measures in Guangzhou during the Republic of China, "code.csv" was divided into several different data sets according to the time corresponding to each historical stage: "code1.csv ", "code2.csv", ... , and "codek.csv". For each dataset, it is first imported into the Python program "coword.py" together with the subclass word list "subclass.txt" to generate the co-word matrix: "co1.csv", "co2.csv", ... csv", "cok.csv", and then import these matrices into Gephi software and UCINET software as "matrix" respectively, the rest of the operation process is the same as "co0.csv The rest of the procedure is the same as "co0.csv".

Ethical Issues

All historical resources collected in this article are from public databases and do not involve privacy and confidentiality. Therefore, there are no ethical issues involved. To avoid copyright disputes, all references will be cited.

Results

The results of this study are used to illustrate four main issues: periods of concentrated epidemics, overall features, historical stages and the stage-specific features of anti-epidemic measures in Republican Guangzhou.

Periods of Concentrated Epidemics in Republican Guangzhou

In this study, a time series analysis of the statistical table "yearbook.csv" of infectious disease data in the yearbook was conducted, and the following three figures were generated.

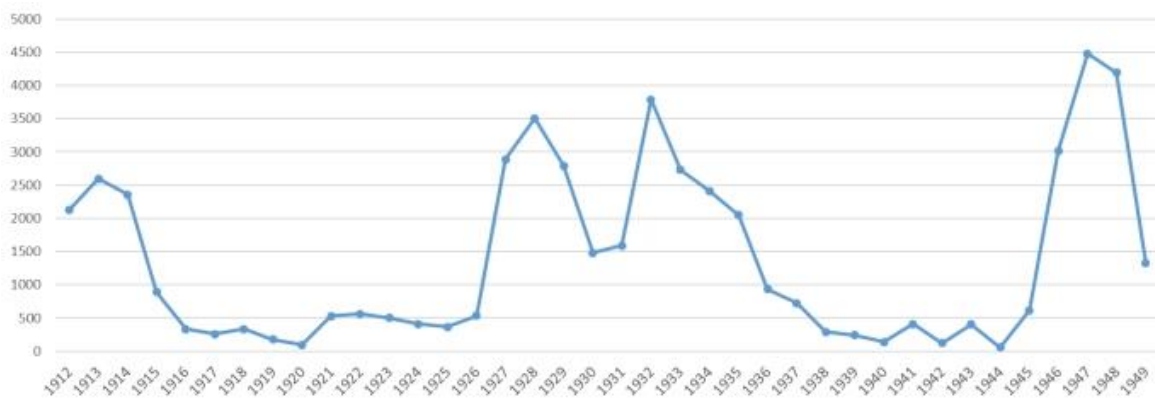


Figure 5. Annual Trend of the Number of Reported Cases of

Infectious Diseases in Guangzhou, 1912-1949

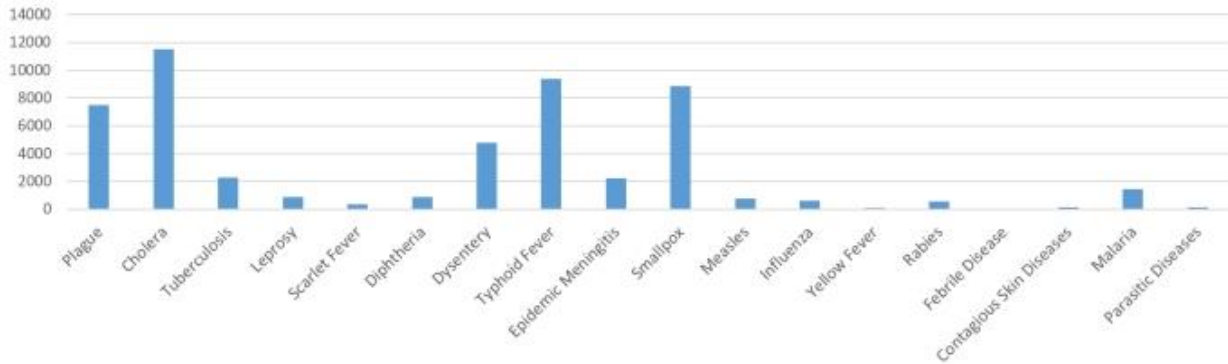


Figure 6. Numbers of Reported Cases of Various Types of Infectious Diseases in Republican Guangzhou, 1912-1949

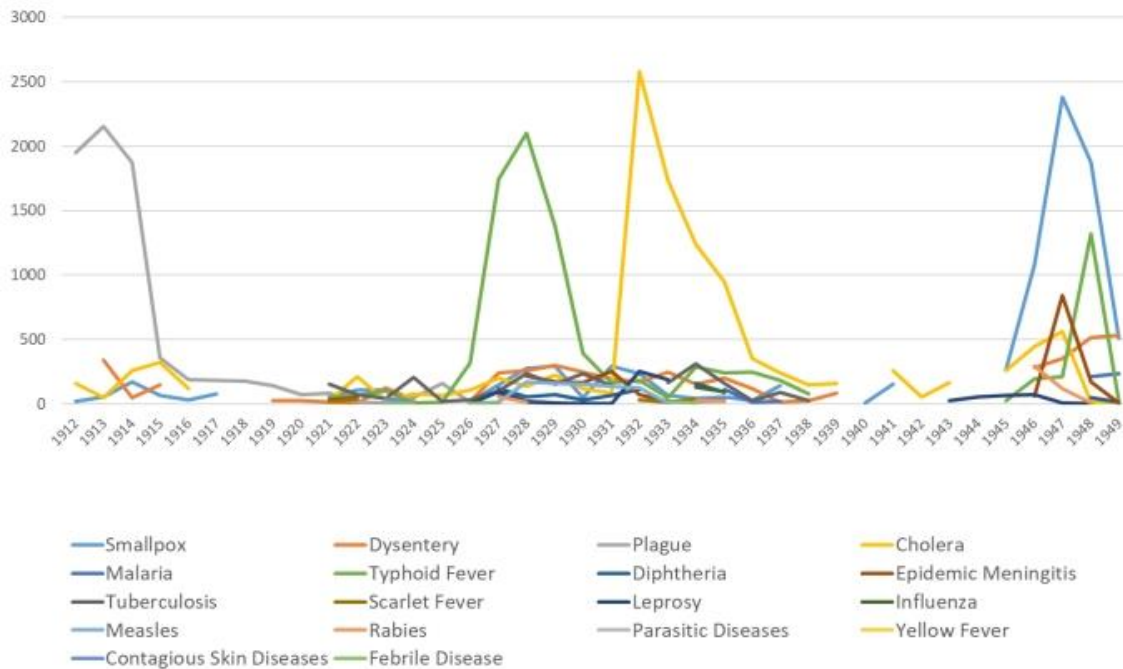


Figure 7. Annual Distribution of Infectious Diseases in Guangzhou, 1912-1949

The statistical table yielded a total of 52,274 cases of infectious diseases. Among them, 11,487 cases of cholera (21.97%); 9,460 cases of typhoid fever (17.93%); 8,843 cases of smallpox (16.92%); 7,487 cases of plague (14.32%); and 4,785 cases of dysentery (9.15%).

Meanwhile, the researcher conducted another time series analysis of the disease word statistics table "C.csv" and obtained the following graphs.

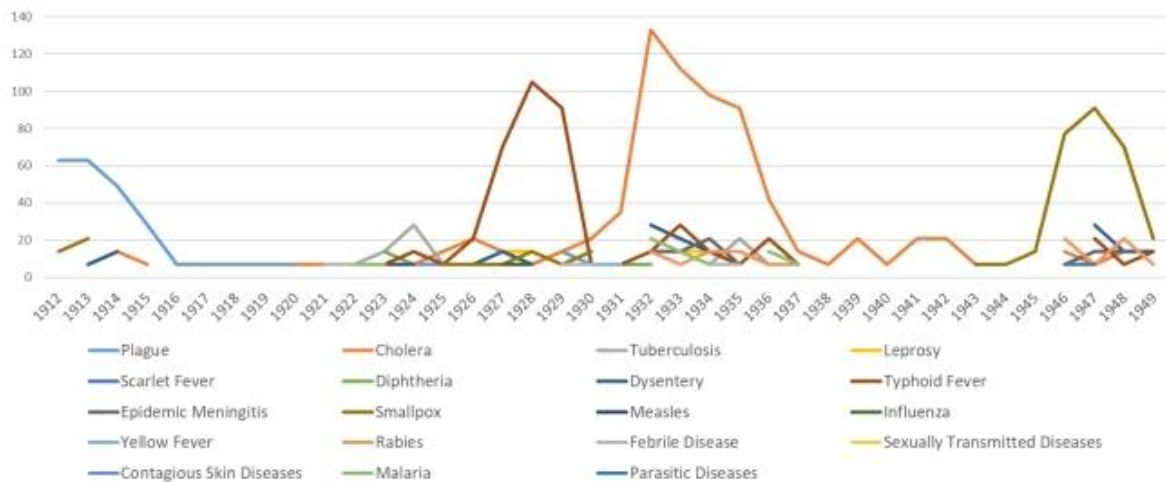


Figure 8. Annual Distribution of Genus "Diseases" (C)

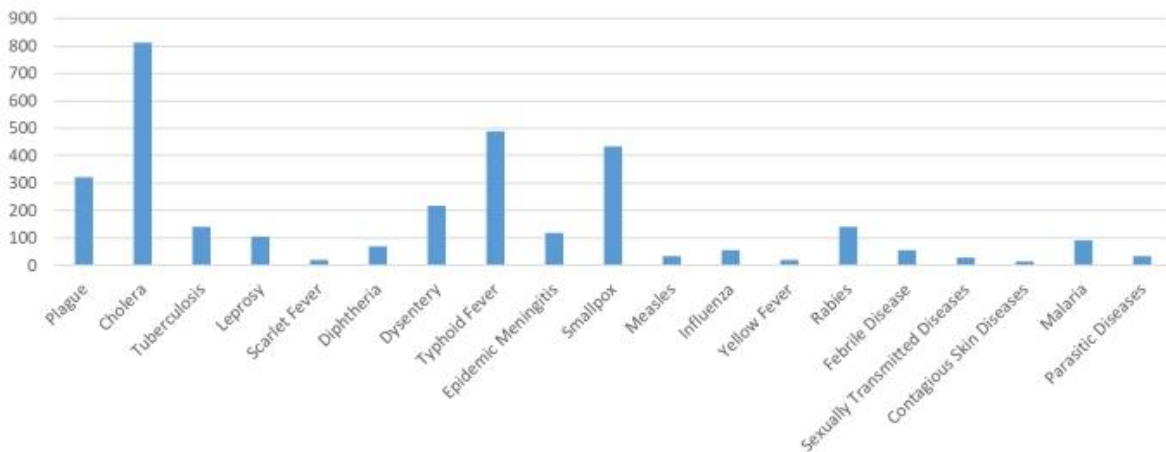


Figure 9. Subtotal Frequency Statistics of Genus "Diseases" (C)

Comparing the above two sets of charts, it can be seen that both time series show four distinct pandemics, namely, plague from 1912 to 1914, typhoid from 1927 to 1929, cholera from 1932 to 1935, and smallpox from 1946 to 1948. Meanwhile, both time series suggest that the major types of epidemics in Guangzhou during the Republican period, in descending order of frequency, were cholera, typhoid fever, smallpox, plague, and dysentery, with cholera probably being the most common type. Considering the estimated similarity rate of 99.88% for the two time series above, it can be assumed that the above time period is the periods of concentrated epidemics in Republican Guangzhou.

Overall Features of Anti-epidemic Measures in Republican Guangzhou

This study argues that the overall features of the anti-epidemic measures in Republican Guangzhou should be explored mainly based on the general sociogram of time-series related sub-class genera, and with reference to the subtotal frequency statistics of Genus "Anti-epidemic Subjects" (A) and Genus "Anti-epidemic Measures" (B) to sort out the characteristics of both the social network dimension and the time-series dimension.

The following are the relevant figures and tables generated according to the methods that have been stated previously.

According to Table 4, it can be found that the general anti-epidemic social network in Republican Guangzhou has higher graph density and average degree, shorter diameter and characteristic path length, and the average clustering coefficient is significantly smaller than 10. This indicates that anti-epidemic social cooperation in Republican Guangzhou is more efficient, and the average clustering coefficient is significantly less than 10, with a significant small-world effect. Republican Guangzhou is more efficient, and the communication among different anti-epidemic subjects is easier and the measures are more timely.

According to Table 5, it can be found that the degree centrality and closeness centrality of preventive measures are absolutely dominant, but the betweenness centrality of Health Bureau is the highest, which indicates that preventive This indicates that preventive measures are the central link of anti-epidemic social cooperation, while Health Bureau is the most critical mediator of the whole social relationship. At the same time, preventive measures also happened to be the genus with the highest structural hole measure, suggesting that this link is highly unlikely to be avoided in the outbreak response.

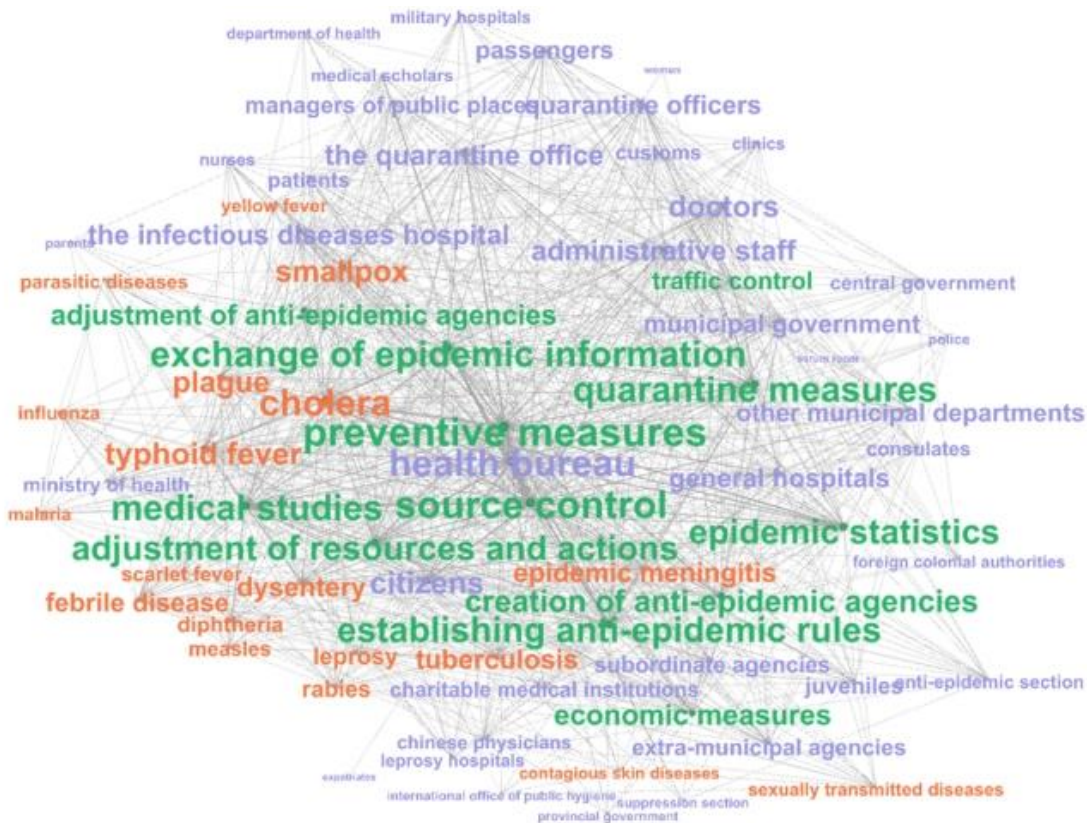


Figure 10. General Sociogram of Time-Series Related Sub-class Genera



Figure 11. Word Frequency Visualization of Time-Series Related Sub-class Genera

Table 4. Macro Metric Values for Time-Series Related Sub-class Genera

Metric	Value
Graph Density	0.441
Average Degree	30.014
Diameter	3
Average Path Length	1.586
Average Clustering Coefficient	0.784

Table 5. Selected Micro Metric Values for Time-Series Related Sub-class Genera

Genus	Effective Size	Constraint	Degree Centrality	Closeness Centrality	Betweenness Centrality
Preventive Measures	0.201	0.026	128	0.93	254.13
Source Control	0.193	0.025	122	0.89	251.47
Health Bureau	0.189	0.024	116	0.86	321.58
Cholera	0.191	0.023	114	0.85	119.29
Exchange of Epidemic Information	0.185	0.022	112	0.84	138.56
General Hospitals	0.179	0.022	110	0.83	221.96
...

In addition, UCINET analysis revealed that the five genera in Table 5 happen to form a cohesive subgroup, which suggests that they form the core of the entire anti-epidemic history in Republican Guangzhou.

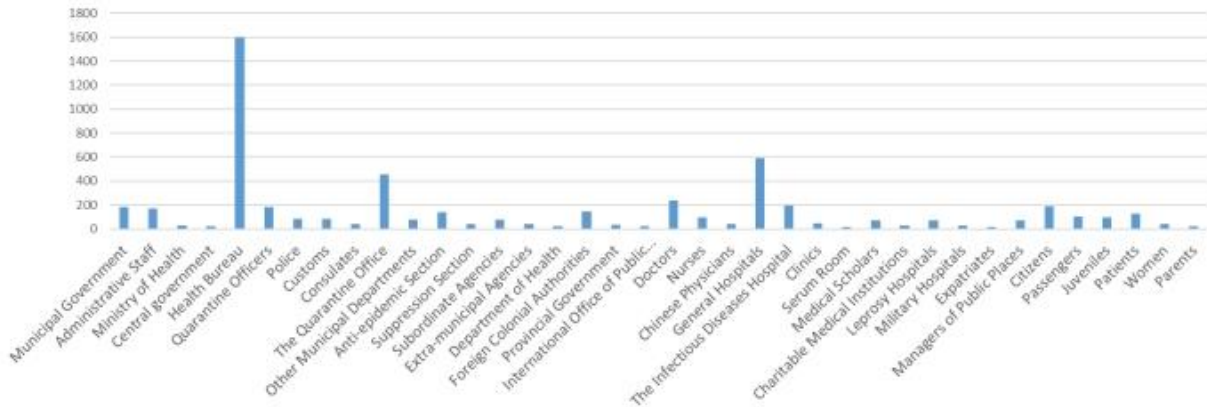


Figure 12. Subtotal Frequency Statistics of Genus "Anti-epidemic Subjects" (A)

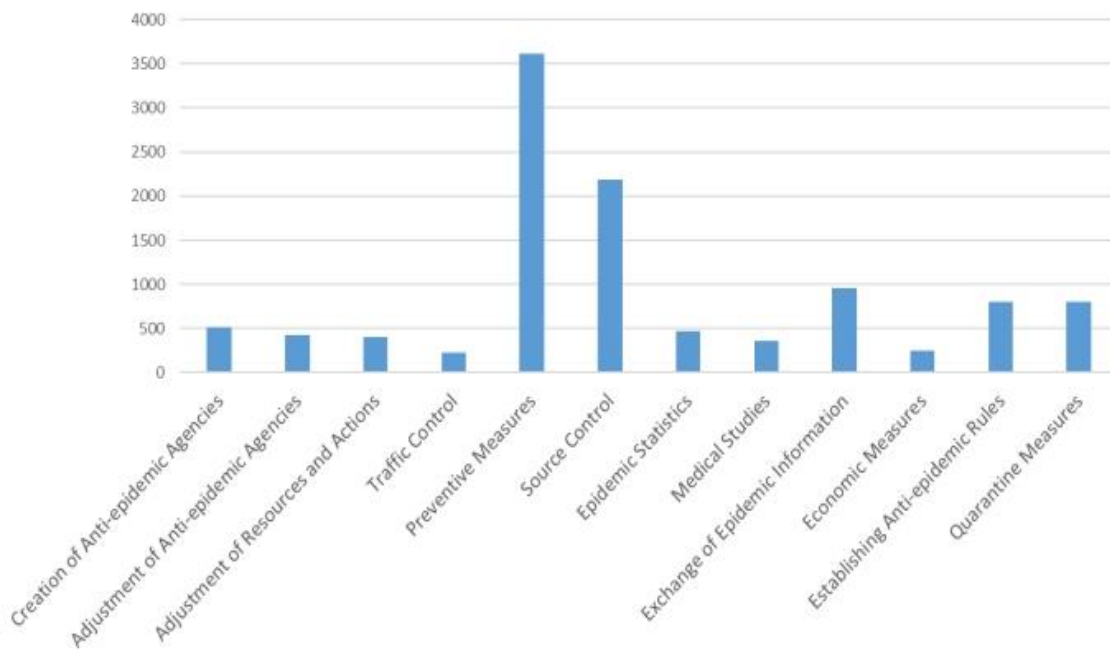


Figure 13. Subtotal Frequency Statistics of Genus "Anti-epidemic Measures" (B)

According to Figure 11, Figure 12 and Figure 13, it can be found that "preventive measures" has the highest frequency in all genera, and its highest frequency is also found in "anti-epidemic measures", followed by "source control". Meanwhile, "Health Bureau" has the highest frequency in "anti-epidemic subjects", followed by "general hospitals". This indicates that Health Bureau and general hospitals may have primary and secondary responsibilities in anti-epidemic cooperation, where preventive measures are most frequently used, and the subjects who use such measures are far from only Health Bureau. Meanwhile, source control is the next most common measure.

Historical Stages of Anti-epidemic Measures in Republican Guangzhou

When periodization of stages of anti-epidemic measures in Republican Guangzhou was conducted, the focus of this study was on the results of the time series analysis, with emphasis on interpreting the graphs of annual trends and distributions, as shown below.

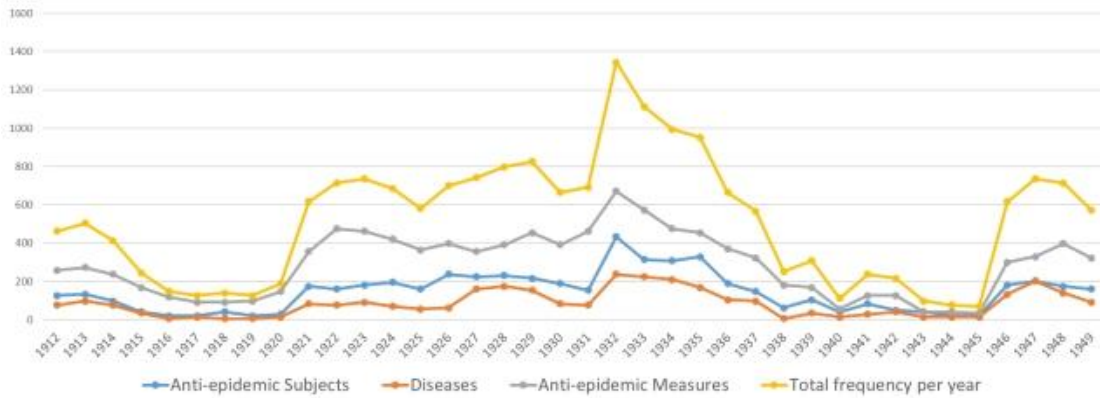


Figure 14. Annual Trend of Various First-class Genera

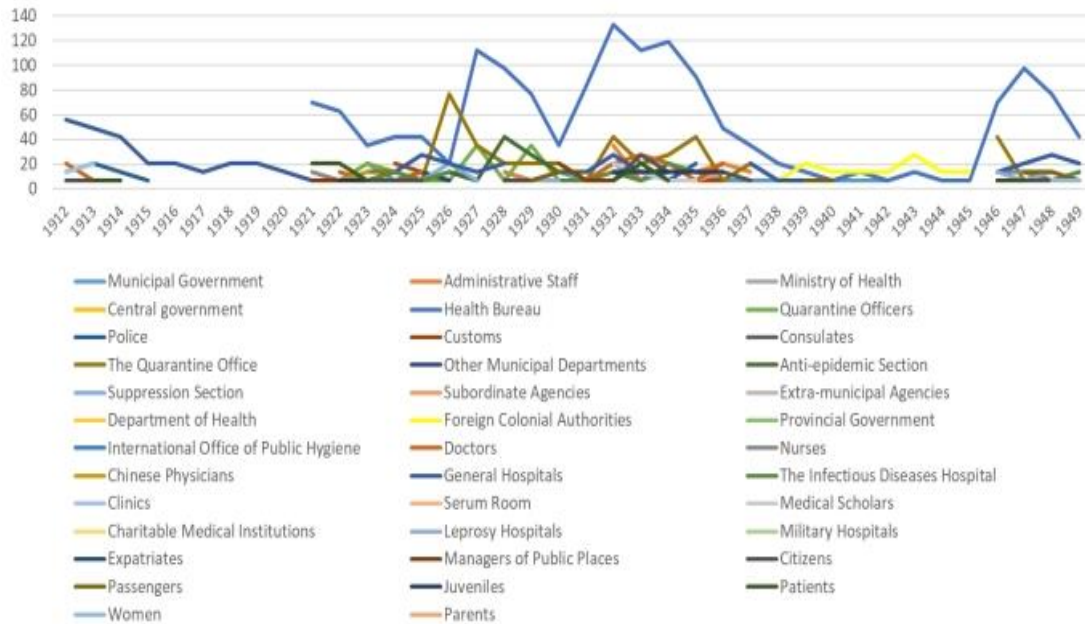


Figure 15. Annual Distribution of Genus “Anti-epidemic Subjects” (A)

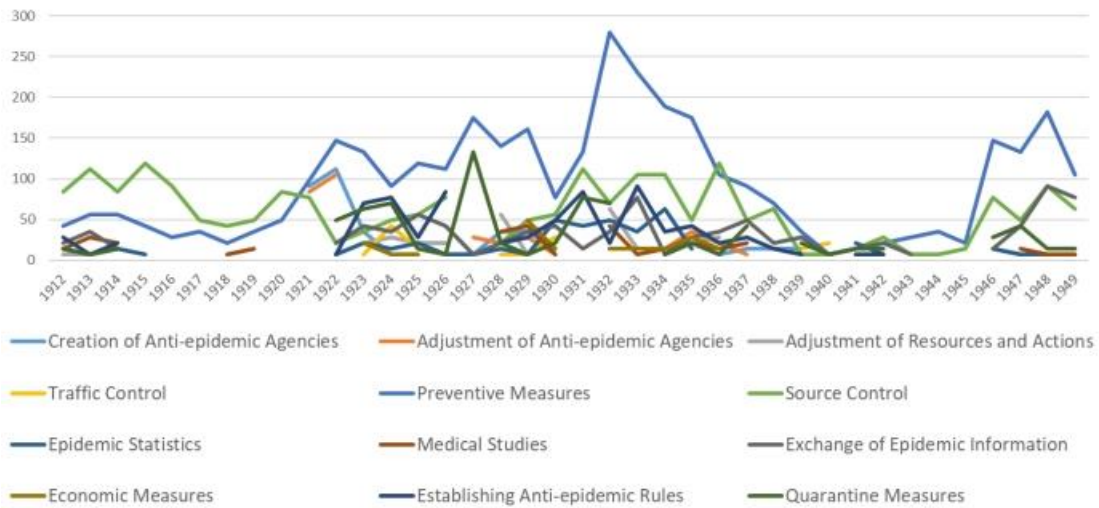


Figure 16. Annual Distribution of Genus “Anti-epidemic Measures” (B)

Considering the above three figures, it can be found that the time series studied in this paper is divided into four phases with different characteristics: the first phase is from 1912 to 1920, in which the frequency of full-text words ranges from low to medium, and the frequency of "general hospitals" in "Anti-epidemic Subjects" is high; the second phase is from 1921 to 1937, in which the frequency of full-text words is the highest, and the frequency of "Anti-epidemic Subjects" is the highest. The third period was from 1938 to 1945, when the frequency of the full text continued to be at a low point, and the frequency of "Health Bureau" in "Anti-epidemic Subjects" was high. "Health Bureau" is still high, but does not dominate, and "Foreign Colonial Authorities" is often the main subject; the fourth period is from 1946 to 1949. The fourth period is from 1946 to 1949, during which the frequency of words in the whole text changed from low to medium, and "Health Bureau" returned to the dominant position in "Anti-epidemic Subjects". Thus, the history of anti-epidemic measures in Republican Guangzhou can be divided into 4 stages.

Stage-specific Features of Anti-epidemic Measures in Republican Guangzhou

After staging the anti-epidemic history in Republican Guangzhou, this study performed social network analysis on each stage separately by generating co-occurrence matrices of each stage to find their respective stage-specific features. The detailed procedure is described above. The following are the sociograms and macro metric values generated from the social network analysis of each stage.

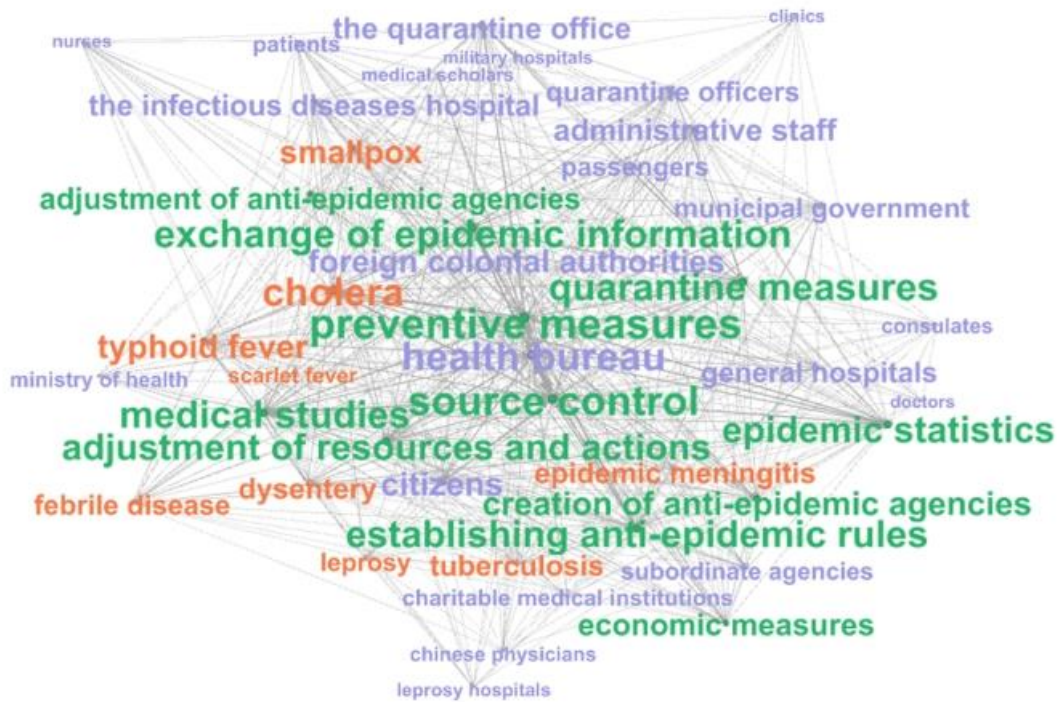


Figure 19. Sociogram of Data from 1938 to 1945

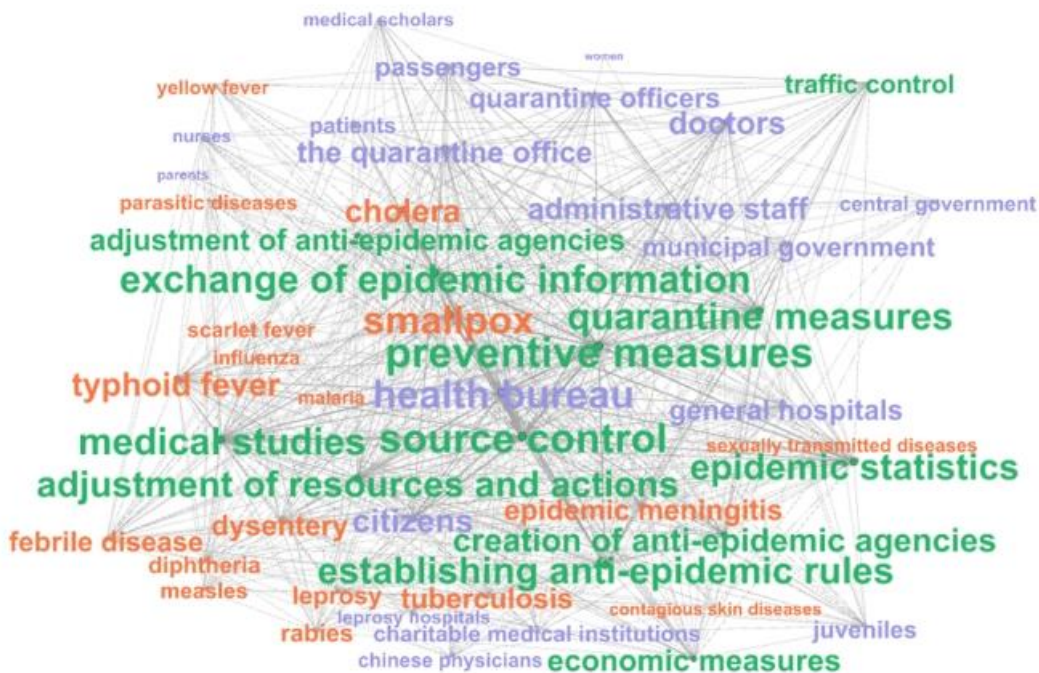


Figure 20. Sociogram of Data from 1946 to 1949

As can be seen from the above graphs, the density is higher in stages I and III, but the small-world effect is

weaker. At the same time, despite the closer cooperation in Phases II and IV, some information may not be transmitted as efficiently and quickly as expected due to the ponderous number of anti-epidemic subjects.

Table 6. Macro Metric Values for Sociograms of Various Stages

Metric	1912-1920	1921-1937	1938-1945	1946-1949
Graph Density	0.681	0.450	0.684	0.583
Average Degree	24.514	30.147	28.721	27.980
Diameter	3	3	2	3
Average Path Length	1.348	1.578	1.586	1.446
Average Clustering Coefficient	0.854	0.784	0.833	0.806

Discussion

From the perspective of basic historical facts, the periodization of anti-epidemic measures in Republican Guangzhou, as postulated by this study, corresponds to the following historical events.

First, in 1921, the Guangzhou Municipal Government was established, with six bureaus including the Health Bureau. The Guangzhou Municipal Bureau of Health was the earliest independent municipal health administration established by a local government in China, with four sections - education, cleanliness, anti-epidemic and statistics - in charge of all health administration matters. The establishment of the Anti-epidemic Section marked the beginning of a dedicated anti-epidemic department in Guangzhou. In this light, the construction stage after 1921 may be directly attributed to the birth of the Guangzhou Health Bureau and the establishment of the Epidemic Prevention Section, as well as the improvement of the epidemic prevention organization and epidemic prevention planning from then until 1937.

Secondly, By the beginning of 1942, the Japanese Authority had already occupied Hong Kong and had stationed special services in Macau, the 'neutral zone', to blockade and monitor the waters and to use it as a base for their advance to Guangzhou. After the Japanese had taken full control of Guangdong, Hong Kong and Macau, they took Guangzhou as the center, controlling the epidemic on the surface while conducting bacteriological experiments and attacks behind the scenes, all at the same time and in coordination with each other, forming a complete bacteriological strategic system. The Japanese invasion of Cantonese health system during the war was therefore likely to have been a major cause of the stagnation of the anti-epidemic development in Guangzhou during this period.

Finally, from 1946 to 1948, Guangzhou faced an unprecedented economic crisis: in 1946, pork cost 720 yuan per catty, beef 420 yuan per catty, firewood 2,200 yuan per quintal, and the prices of vegetables and all items kept climbing upwards. By 1948, the rise in prices intensified. Due to the soaring prices, people's living conditions deteriorated, and many citizens had to eat wild vegetables and rice bran, and some even fed on dead cats and rats. As a result of poverty and illness, the number of corpses in Guangzhou city "increased day by

day". Under the pressure of both the economy and the epidemic, the anti-epidemic measures in Guangzhou needed to be developed and were hampered at the same time, so it can be called the stage of difficult reconstruction.

Conclusion

In summary, Guangzhou had four significant pandemics during the Republican period, namely the plague epidemic from 1912 to 1914, the typhoid epidemic from 1927 to 1929, the cholera epidemic from 1932 to 1935, and the smallpox epidemic in from 1946 to 1948. From a holistic point of view, the main types of epidemics in Republican Guangzhou were, in order of priority, cholera, typhoid, smallpox, plague and dysentery, of which cholera was probably the most common type.

In terms of specific anti-epidemic measures, source control is the main measure in the early stage, but the general tendency was to implement preventive measures. The Health Bureau was mainly responsible for anti-epidemic measures, followed by the general hospitals, and the citizens was generally less motivated to prevent epidemics than the Health Bureau and the hospitals.

At the level of periodization, the historical evolution of anti-epidemic measures in Republican Guangzhou can be broadly summarized into four stages. Firstly, the period from 1912 to 1920 was the "stage of initialization". The main subject in this period was the general hospitals, and source control was the main measure, with few quantities of anti-epidemic measures, while the anti-epidemic institutions were gradually developed. Secondly, the period from 1921 to 1937 was the "stage of construction". During this period, the main anti-epidemic subject was the Health Bureau, and the anti-epidemic knowledge and experience gradually increased, while the epidemic prevention institutions began to implement anti-epidemic measures systematically, mainly preventive measures. Thirdly, the period from 1938 to 1945 was the "stage of stagnation". The main measure at this stage is still preventive measures, but due to the occupation of Guangzhou by Japan, there was a lack of information on epidemic prevention and control and a tendency to reduce the number of anti-epidemic institutions and measures. Finally, the period from 1946 to 1949 was the "stage of difficult reconstruction". During this period, the Health Bureau regained its role as the main anti-epidemic subject, and the anti-epidemic institutions and measures began to be rebuilt and developed, especially preventive measures. However, they were still insufficient to recover to the second stage.

On the whole, the stage of construction left more abundant historical materials, and during this period Guangzhou matured in terms of health systems, regulations and social awareness, leaving valuable development experiences for future generations.

Recommendations

As a relatively new paradigm study, the innovations of this paper include: an attempt to combine quantitative

and qualitative medical history research using textual analysis methods and a typological generalization of the evolutionary staging of medical history events; an attempt to apply natural language processing (NLP) techniques, big data analysis methods, and bibliometric techniques to historical research, and to argue the conclusions using both time series algorithms and basic historical facts perspectives. In addition, this study has these features: turning historical data into corpus for corpus analysis; visual data presentation and interpretation through multiple graphical forms; clear inclusion and exclusion criteria to avoid the coarse generality of systematic research; and collation and inclusion of folk and TCM data to avoid the singularity of sources. Additional advantages include: the clear positioning of the research surface of the topic and the absence of false, large and empty terms. The article combines the traditional literature search and collection with the analysis method of digital humanities, which improves the accuracy of the conclusion.

The more obvious shortcomings of this study are the small sample size and the still insufficient exploration of social network analysis. For example, UCINET can also calculate parameters such as modularity, but the authors have not yet found a way to use these parameters for interpreting historical data. In addition, more relevant future research is needed to support this study, as there is essentially no similar research prior to this study and this study does not follow a valid paradigm that is accepted in the academic community. In addition, since the original materials for this study were taken from online databases, there may be a lack of offline historical proofs, resulting in omissions or misrepresentations. Finally, the larger part of this paper focuses on the interpretation of visual data, while the quantitative aspects are lacking.

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History of Physics and the Trust in Science

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Abstract: Recently, the status of science within society has been contested by antiscientific movements, so that ill-founded debates have become a widespread problem. The trust in science is the trust that the social process of scientific investigation is still the most reliable and authoritative way to produce knowledge of natural phenomena. Therefore, to restore the authority of science, science education needs to focus on the social process of knowledge production. Since the epistemological norms of the scientific communities have been historically established, this assigns the history and philosophy of science an important role in science education. This contribution discusses didactic paths that introduce an historical approach to the physics laboratory, to help students and teachers in focusing on the social construction of scientific investigation. Link to topics of actual relevance from both the scientific and the societal points of view are also pursued.

Keywords: Physics Education, History of Physics, Science Education, Public Outreach, Public Engagement with Science

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Introduction

Scientific knowledge is a social construction. This means that knowledge is established by the consensual agreement reached within the scientific community on what Robert Boyle called matter of facts [1], i.e., objective and undisputable facts, upon which there can be no disagreement. The success of this social process of

building knowledge granted to science an institutional authority within society, because of its capability in producing technological innovation and economic development. In these last years, however, the authority of science has been questioned by anti-scientific movements, which are undermining our capabilities to address many global challenges by spreading misconceptions and ill-founded debates.

The problem of restoring trust is therefore not simply that of promoting science and the value of scientific discoveries among the public but that of reestablishing that the social process of building scientific consensus is still the most reliable and authoritative way to produce knowledge of natural phenomena. This means that people need to know how science works and operates within society. To this end, science education in schools needs to develop a clear focus on the methodologies and the epistemological norms that govern the production of knowledge in scientific communities. This appears particularly true for physics education, because physics is the most taught experimental science worldwide. For example, the usual experimental practice in school laboratories consists in data acquisition, analysis, and comparison with theoretical results. Important questions are generally taken for granted and often not addressed, like for example what is an experiment, why does one do experiments in order to arrive at scientific truth, what recommended the experimental way in science over alternatives to it. The mistrust of science of rampant antiscientific movements tells that this issue needs to be addressed.

Since the answer to these questions is essentially historical in character, in the sense that they determined historically the epistemological norms of the scientific communities, this assigns the history and philosophy of science an important role in science education. This was not recognized in the past, when it was argued that a historical approach to science education did not positively affect students learning of science [2]. Nowadays, the educational value of these disciplines is quite well established. For example, there is extensive literature on the educational value of the history of physics in physics education [3-6]. The introduction of topics of history of physics has been proven to be helpful for students in overcoming conceptual difficulties and in promoting both cognitive and emotional engagement. A historical approach to science education can guide students' reflection on the nature of science [4] and can favor the interaction of schools with universities and research institutions [5,6]. Nevertheless, despite this extensive literature, history and philosophy of science are still poorly applied and practiced in the everyday life of most schools.

This contribution discusses didactic paths that introduce an historical approach to the physics laboratory to help students and teachers in focusing on the social construction of scientific investigation. Link to topics of actual relevance from both the scientific and the societal points of view was also pursued. The paths we are going to discuss have been developed as an outgrowth of one of our outreach programs for schools, aimed at recovering disused instrumentation in laboratories of some schools of the region of Calabria [5,7].

In this paper we will focus on the goal of giving an historical approach to the activity, in order to allow students to situate the topics studied within both the historical and the research context in which they were investigated, guiding their reflections towards the acceptable methods of producing reliable scientific knowledge.

Didactic Paths

The first path we illustrate is related to the history of vacuum technologies [7]. In the foregoing discussion we mentioned Robert Boyle, who set-up a vacuum pump, following the work by Torricelli, Pascal and Von Guericke [1]. Boyle's work on vacuum contributed to establish what is an experiment and the role of the experimental practice in establishing scientific truth [1]. In some school we found some old vacuum pump, like for example that reported in fig.1a, which dates back to the end of the 19th or the beginning of the 20th century and is a replica of the pump developed at the beginning of the 18th century by Haukesbee, who improved the Boyle's design [7]. Since the shape of this pump is still very similar to modern vacuum equipment that can be found in schools, the usual vacuum bells operated with a rotary pump, we decided to repeat with these modern equipment some common experiments on vacuum, most of which were performed originally by Torricelli, Pascal and Boyle – boiling water, inflating ballons and shaving foam etc.... Though not working, the presence of the old pump allowed to contextualize the activity within the historical period of its invention and on its role on the birth of the experimental science.



Figure1. A replica of the Haukesbee Pump, Dating Back to the End of the 19th Century

This activity at school was also associated with a visit to university, where students had the occasion to perform some experiments with more complex modern vacuum systems used either for teaching and for research. In particular, a visit to research laboratories allowed students to see current vacuum technologies used for research on nanoscience and nanotechnologies [7], interacting with researchers about the motivation and goal of their research. therefore, the activity starts from a fundamental question about the status of the experimental practice – the Boyle's question 'why do experiments lead to truth?' - and develops through a thematic path that connect the history of physics to actual research topics and to the curricula of several school disciplines, including physics, history and philosophy.

The Haukesbee pump in fig.1 used a manual double piston-cylinder system whose operation was improved by a gear. The piston-cylinder system, invented by Von Guericke, is a very simple mechanical system that had a profound impact on technological innovation at the end of the 18th century. The piston-cylinder system inspired and provided the basis for the development of the steam engine, like the model in fig.2a. These engines had an important part in the development of Thermodynamics and its application. On the other side, the invention of the steam engine by James Watt at the end of 18th century is at the origin of the first industrial revolution and therefore it can be associated to the curricular classes of history. The didactic path we developed with the instruments in fig.2 has the goal of showing how science operates in society. The practice of the experimental methods led to technological innovation that in turn resulted in profound societal innovation and changes. The development of several types of engines can be immediately connected with the study of several basic examples of thermodynamic cycles, which developed right from the need of understanding the dynamics of these engines. In our didactic path this is done by using for example a Stirling engine, like that in fig.2b. Moreover, the engines applying the thermodynamic of the Stirling cycle are commonly used in research and in many applications, which can connect with current issues on energy storage and energy conversion of social, environmental and economical relevance. For example, fig.3a reports a solar dish Stirling system.

Another path is related to the electron and the origin of quantum mechanics. The electron was individuated by Thomson [8] by studying the deflection into electric and magnetic fields of those called by the time cathode rays. Cathode rays were produced in discharge tubes similar to those depicted in fig.3. These are glass tubes of various dimensions and shapes, partially evacuated and with two metal electrodes.

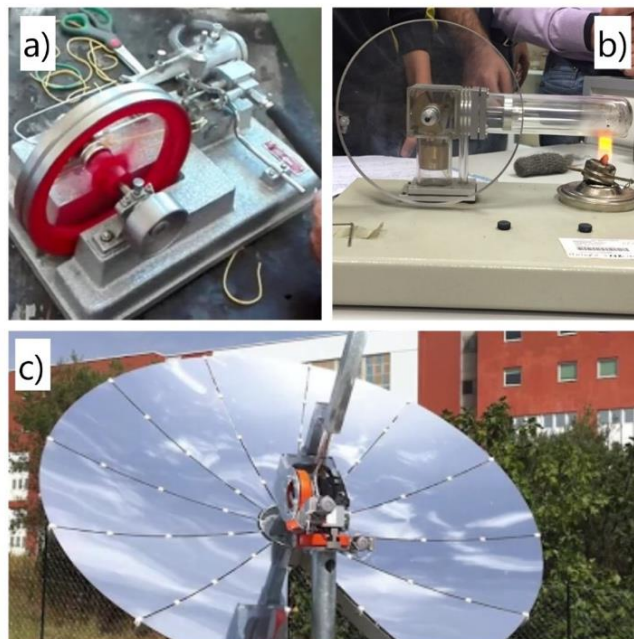


Figure 2. a) A Model of a Steam Engine; b) A Didactic Stirling Engines; c) Solar Dish Stirling system at University of Calabria

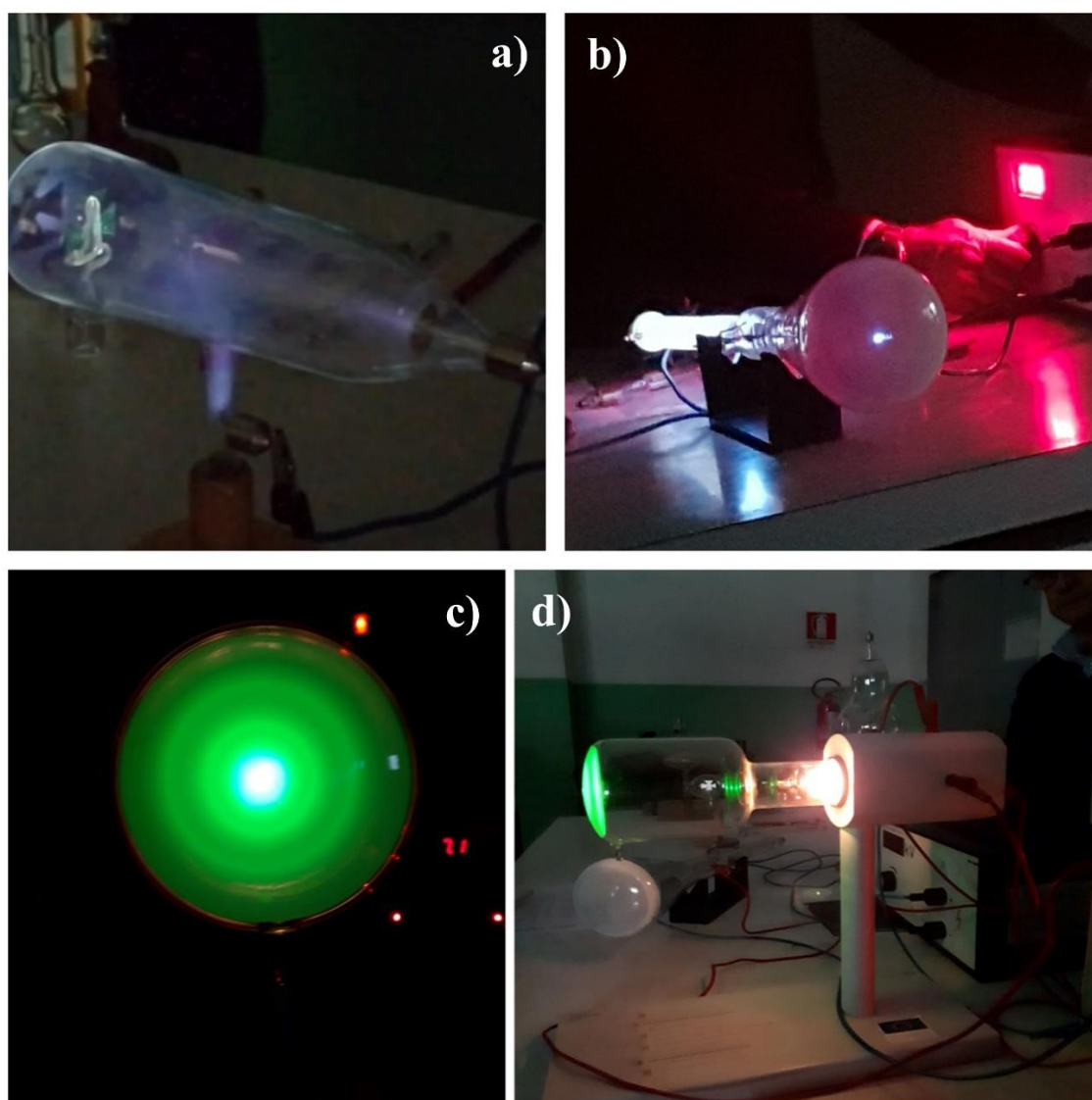


Figure 3. Some Discharge Tubes: A) Maltese Cross Tube; B) A Tube Similar to Those Used by Thomson that Led to the Discovery of the Electron; C) And D) An Apparatus to Observe the Wave Nature of the Electron, Sample, As Demonstrated by the Diffraction Pattern in Fig. 3c, Obtained when Electrons are Scattered by a Graphite Sample

The tube in fig. 3a was one of the first invented to study the properties of cathode rays. In particular the tube in fig.3a shows that the rays are negatively charged, moving from the negative (cathode) to the positive one, from which the original name of cathode rays. The rays are stopped by the Maltese cross, as demonstrated by the shadow seen on the glass. The tube in fig.3b is the technological development of the tube in fig.3a. It allows to repeat the Thomson experiments and to measure the charge to mass ratio of the electron, by its deflection into an electric field. Moreover, the deflection of electrons into electric and magnetic fields makes the instrument suited also to illustrate the laws of Newtonian dynamics of materials point.

J.J. Thomson called the electrons “corpuscles” [8]. In 1924, De Broglie [9] postulated electrons were waves, which can be observed with a diffraction tube like that in fig.3c and fig.3d. Therefore, with these instruments, one can retrace the history of the electron by reproducing some of the experimental facts that led to the second scientific revolution, which was much appreciated by students and teachers, who had the occasion to discuss the interpretative problems and the change of mindset required by the scientific revolution of the early 20th century, that lead to the birth of quantum mechanics.

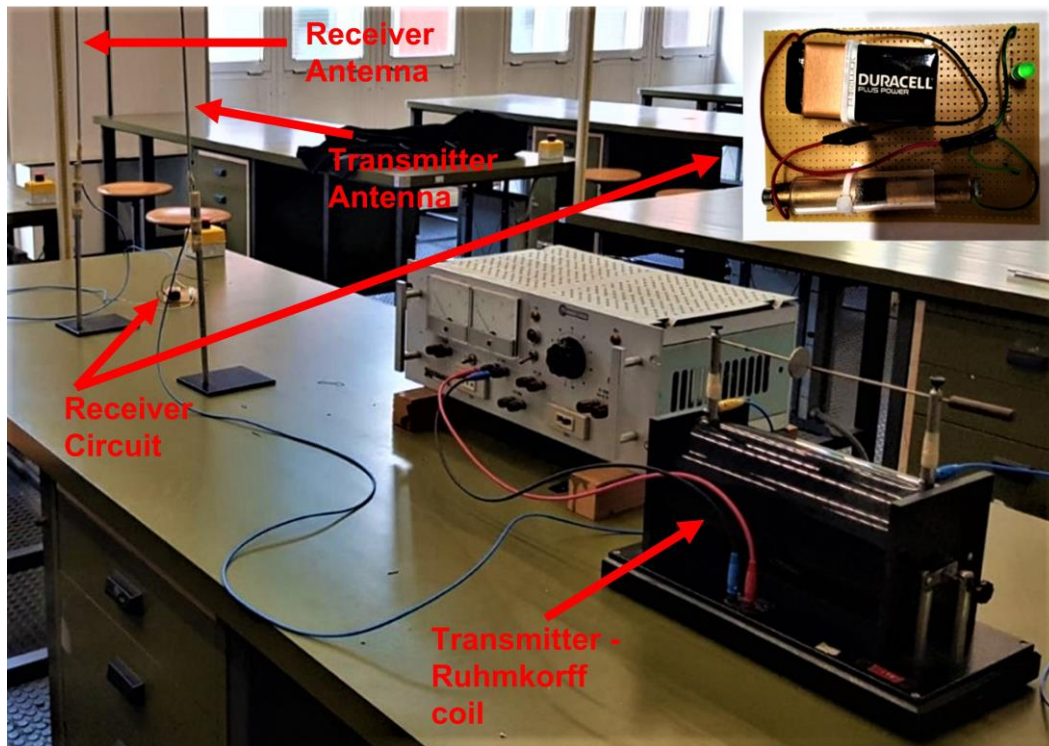


Figure 4. A Reproduction of the Setup Used for the Marconi Experiment with the
Detail of the Receiver Circuit in the Inset

The last path we describe is devoted to a revisitation of the first experiments performed by Guglielmo Marconi on the transmission and detection of electromagnetic waves in 1895 [10]. Fig.4 shows the apparatus we set-up to produce and reveal electromagnetic waves, following the scheme that Guglielmo Marconi used in his experiment. The transmitter is made using a Ruhmkorff coil (fig.4) from a school connected to a power supply. The coil is one of the instruments that we have found in almost all the schools we have visited. As a receiver, we built a Marconi coherer, made by putting iron filings in a plexiglass tube closed by two bolts and inserted in a circuit containing a LED diode, whose light signals the passage of current (see the inset in fig.4). The transmitter and the receiver are connected to the ground and to the respective antennas, made with aluminum rods. The use of Antennas and ground connection was the revolutionary idea of Marconi, that allowed to dramatically increase the distance between the transmitter and the receiver. Marconi developed his ideas from 1895 to 1901, where the first transoceanic transmission was performed. As it is nowadays known, the transmission of the electromagnetic waves through distances on a planetary scale is made possible by the ionosphere surrounding the earth, which reflects the waves back toward the ground allowing to overcome the

problem of the earth's curvature. Though Marconi was not aware of this fact, he did not trust the limitations posed by the current knowledge of his time because it was in his style of scientist to ground scientific knowledge on experimental evidence, thus providing an important example of application of the experimental method.

Conclusion

In conclusion we have discussed an historical approach to the activity of a physics laboratory. The approach is implemented through didactic paths that allow for the historical contextualization of the instruments within their period of invention, for a close and interdisciplinary connection with the school curriculum, and for connections with either current scientific research and/or societal issues and students' everyday life. The didactic paths we have described starts from fundamental questions about the nature of science, guiding students' reflections to the issue of acceptable methods of knowledge production, while at the same time preserving the focus on content knowledge in science education. The ultimate goal is the increase of the students' awareness of the epistemological norms that govern the production of knowledge in scientific communities. If they learn how science works and operates within society, they will trust that scientific research is still the most reliable way to produce representations of natural phenomenon.

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Analysis of Postgraduate Theses on Analytical Thinking in Türkiye

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Abstract: This study aims to examine postgraduate studies on analytical thinking in Türkiye. Using the descriptive content analysis method, postgraduate studies on analytical thinking skills were examined and arranged, and general trends in the field were determined. The YÖK national database was searched using the keyword "analytical thinking." Studies on the subject were examined according to the year, publication language, study group, type of study, subject associated with analytical thinking skills, research method, measurement tool, and quantitative analysis techniques. According to the results obtained, it was observed that postgraduate research on analytical thinking skills started in 2009 and increased in 2021. It is understood that the studies are primarily carried out with secondary school and university students. One study was found with high school students and teachers. There are no studies conducted with pre-school and primary school students. Most of the studies are at the graduate level. Analytical thinking skills are discussed in topics such as Conceptual understanding, Context-based learning, Critical thinking, Life skills, Mathematical problem solving, Personnel factors, and STEM. It was understood that a large proportion of the studies examined were in the type of quantitative research. No study is only in the type of qualitative research. Studies need to investigate the relationship between analytical and higher-order thinking skills such as creative thinking, reasoning, and practical thinking.

Keywords: Analytical Thinking, Descriptive Analysis, Graduate Theses

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Introduction

Rapidly changing living conditions require each individual to receive education in line with the needs of the age. It is predicted that many young people will have professions other than the ones that exist today. Individuals need to be equipped with life skills to maintain competitiveness, support production skills and do practical work for humanity. In this context, acquiring high-level thinking skills for students can improve individuals' ability to think and act independently. It is observed that the education programs developed by the countries aim to provide students with high-level thinking skills such as critical thinking, creative thinking, analytical thinking, reflective thinking, argumentation, reasoning, and problem-solving (Noroozi 2018, 2022; Noroozi et al., 2020; Valero Haro et al., 2019; 2022). It has been emphasized that individuals should have critical and analytical

thinking skills to maintain a thriving social and business life today and in the near future (Akar, 2020; Feyzioglu, 2019; Paziotopolos & Kroll, 2004; Yurt, 2022). This research is aimed to examine the postgraduate studies on analytical thinking skills in Türkiye.

Analytical thinking skills are among high-level thinking skills (Krathwohl, 2002). The ability of students to carry out a valid scientific study depends on their effective use of analytical thinking skills. Because analytical thinking is necessary for examining the problem, determining the solutions, revealing the relations between the parts and making effective decisions. Bloom's taxonomy has provided an essential approach to understanding and defining higher-order thinking skills. There are six steps in taxonomy: remembering, understanding, applying, analysis, evaluation, and synthesis. The analysis step elaborates the preceding steps of remembering, understanding and applying. This step is the predecessor of the evaluation and synthesis steps after it.

One of the primary purposes of education is to enable students to use scientific processes correctly. In this way, it will be possible for them to access the correct information and use the information they access effectively. In the scientific process, students observe, describe and test events. Students with analytical thinking skills make better observations in the scientific process, see the relationships between the parts more efficiently, and better understand the role of each part in the whole. Developing analytical thinking skills can make it easier for students to conduct more qualified scientific studies, gain scientific process skills, and use them in their lives.

It has been emphasized that mainly analytical, creative, and practical thinking skills should be taught to students in schools (Sternberg, 2006). Students who can think analytically are more competent in criticizing, comparing, and evaluating the data they have obtained. Developing analytical thinking skills can facilitate students to be more creative. Individuals with analytical thinking skills have some common characteristics. These features are listed as follows (Amer, 2005):

- When dealing with the problems they face, they act on facts and logic rather than emotions,
- They are more likely to be successful in the problems they are interested in than other individuals,
- They tend to work focused on production,
- They may show different tendencies according to the problem-solving approach, and they are open to change,
- They focus more on data and ideas,
- They like to be organized,
- They are aware of their abilities, and their metacognitive skills are developed,
- They can manage to keep their emotions in the background,
- They can be cautious in bilateral relations.

Analytical thinking skill is one of the higher order thinking skills. Analytical thinking skill is the ability to divide a specific situation into smaller parts and to understand the relationships between these parts (Amer, 2005). Analytical thinking is closely related to critical and creative thinking. The development of this skill can

facilitate students to produce new and original ideas. Students question ideas, present evidence, question the arguments that form the basic structure of ideas, and establish relationships between arguments depending on their analytical thinking. In this context, it can be said that analytical thinking is necessary for critical thinking.

Today, individuals need to be able to think argumentatively, reasonably, creatively, and independently in order to keep up with changing living conditions (Lin, 2021; Ling & Ling, 2021; Noroozi et al., 2012; 2016; 2018; Yitmen, & Almusaed, 2022). In order to be able to think independently, it is necessary to be able to classify and define different perspectives and to be able to recognize the relationships that exist between them. Students can provide these abilities with analytical thinking skills. An individual who can think analytically can internalize the knowledge and skills he has learned and apply them in real life (Chonkaew et al., 2016). One of the aims of education is to enable individuals to find solutions to daily problems by using the information they have learned. The mental formation process required for solving the problem is closely related to analytical thinking skill. As the analytical thinking skill increases, the mental formation process also increases.

Purpose of the Research

Analytical thinking is one of the individuals' most important skills that the production and service sector demands (Schwab & Samans, 2016). In this respect, one of the primary purposes of education is to provide students with analytical thinking skills. Determining the factors related to analytical thinking skills can provide a more qualified preparation for the education process. In addition, determining the general trends of the research on the subject can guide the studies to be done later. This way, more qualified studies that meet the need for analytical thinking skills can be carried out. This research is aimed to examine graduate studies on analytical thinking in Türkiye. Accordingly, answers to the following research questions were sought.

- 1- What is the distribution of postgraduate studies on analytical thinking skills by years in Türkiye?
- 2- What is the distribution of postgraduate studies on analytical thinking skills in Türkiye according to the publication language?
- 3- What is the distribution of postgraduate studies on analytical thinking skills in Türkiye according to the study group?
- 4- What is the distribution of postgraduate studies on analytical thinking skills in Türkiye according to the type of study?
- 5- How is the distribution of postgraduate studies on analytical thinking skills in Türkiye according to the related subjects?
- 6- What is the distribution of postgraduate studies on analytical thinking skills in Türkiye according to the research method used?
- 7- How is the distribution of postgraduate studies on analytical thinking skills in Türkiye according to the measurement tools used?
- 8- What is the distribution of postgraduate studies on analytical thinking skills in Türkiye according to the analysis techniques used?

Method

The descriptive content analysis method was used in the research. This method is expressed as "describing the studies on a particular subject and evaluating the trends and research results in a descriptive dimension" (Çalık & Sözbilir, 2014). Using the descriptive content analysis method, postgraduate studies on analytical thinking skills were examined and arranged, and general trends in the field were determined. The YÖK national database was searched using the keyword "analytical thinking." Eight studies using the word analytical thinking in their titles were included in the research.

Results

This section gives descriptive information about graduate studies on analytical thinking skills. Studies on the subject were examined according to the year, publication language, study group, type of study, subject associated with analytical thinking skills, research method, measurement tool, and quantitative analysis techniques.

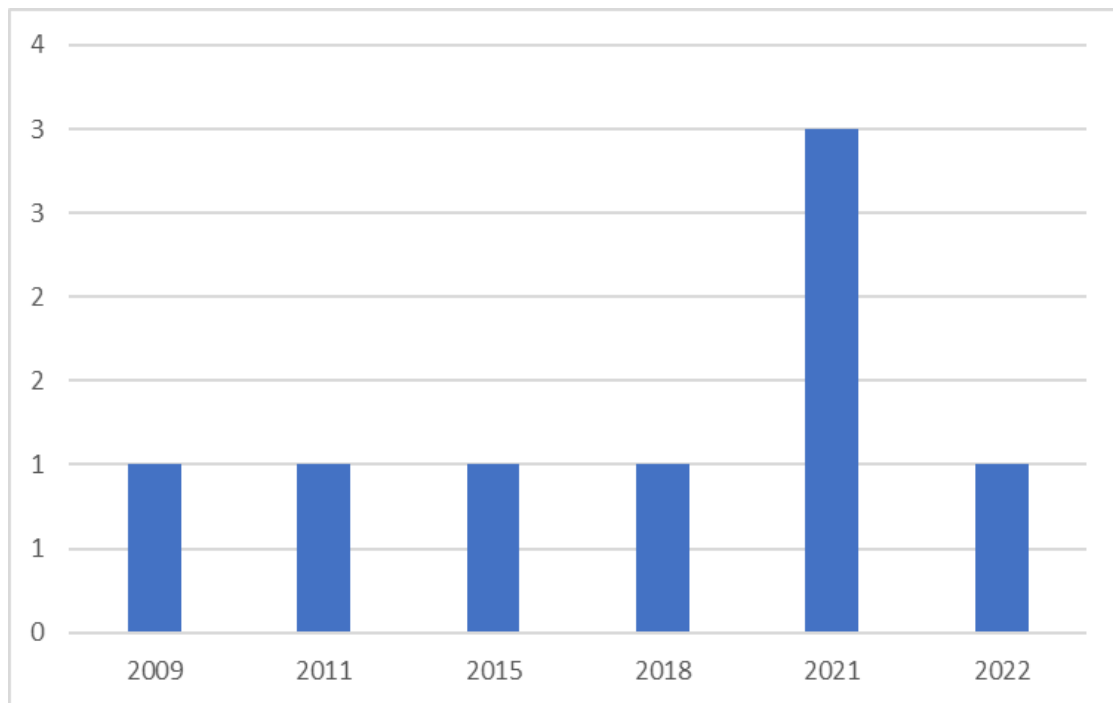


Figure 1. Distribution of Studies by Years

When Figure 1 is examined, it is understood that postgraduate research on analytical thinking skills started in 2009. Most works were completed in 2021. It has been observed that a limited number of studies have been conducted on the subject over time.

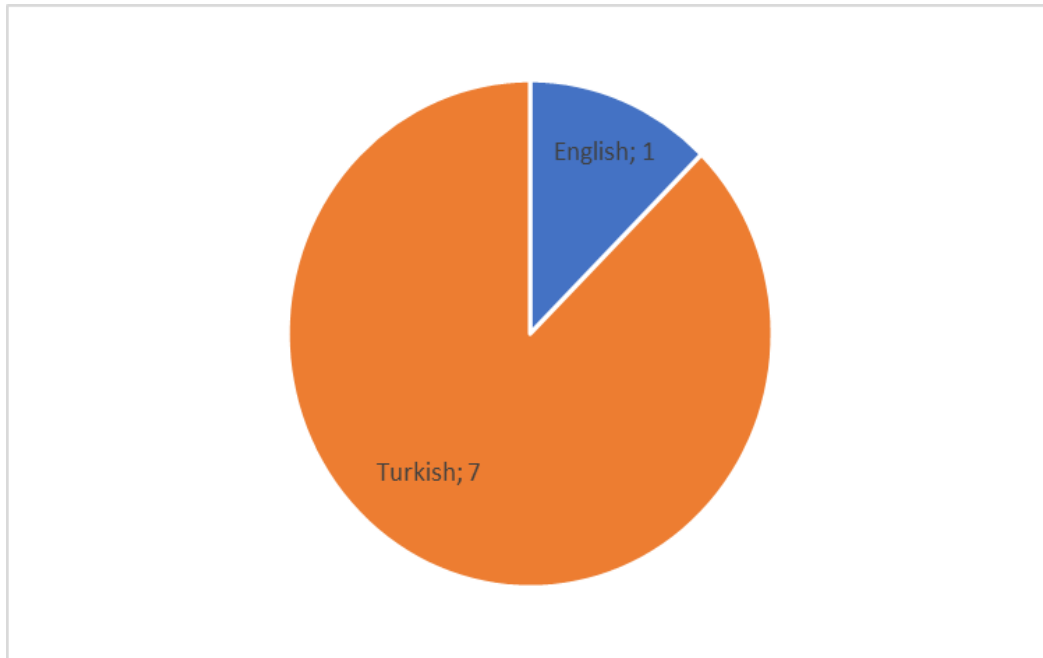


Figure 2. Distribution of Studies by Publication Language

When Figure 2 is examined, it is understood that a large proportion (87.5%) of postgraduate studies on analytical thinking were published in Turkish. There is only one study published in English.

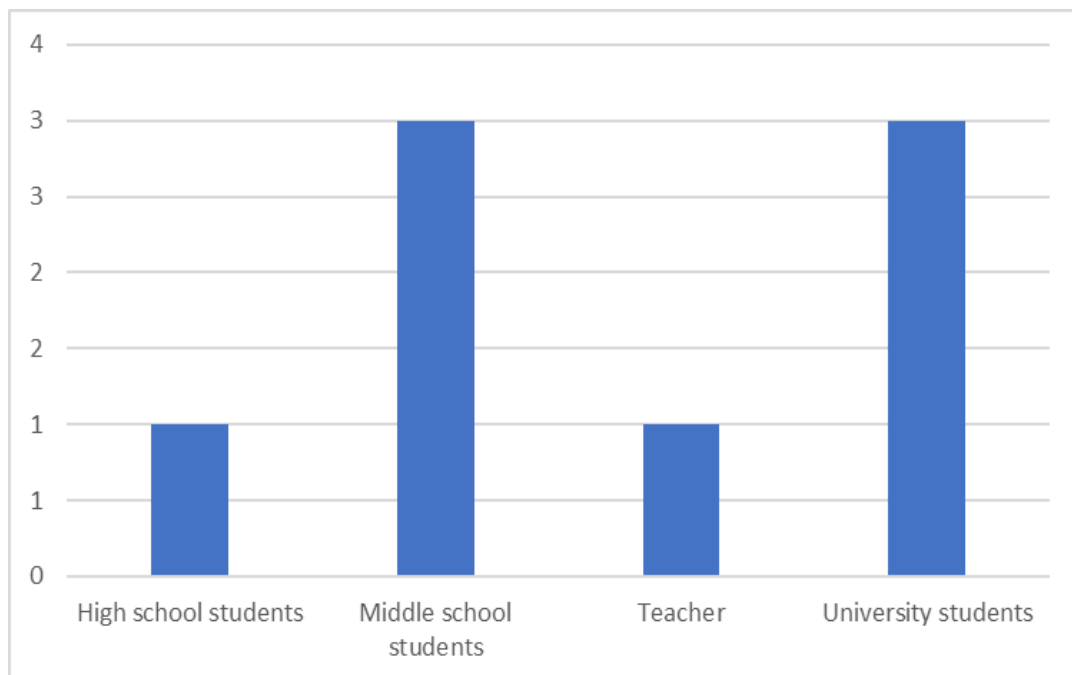


Figure 3. Distribution of Studies by Study Group

When Figure 3 is examined, it is understood that postgraduate studies on analytical thinking skills are mainly carried out with secondary school and university students. There are studies conducted with high school students and teachers. There are no studies conducted with pre-school and primary school students.

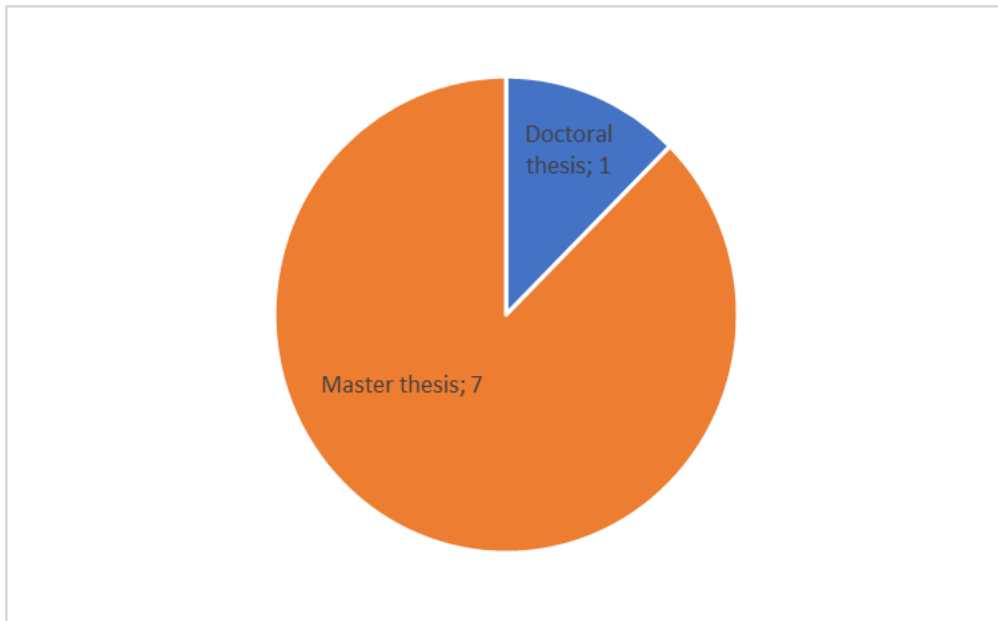


Figure 4. Distribution of Studies by Study Type

When Figure 4 is examined, it is understood that most postgraduate studies on analytical thinking (87.5%) are at the postgraduate level. There is only one study at the doctoral level on analytical thinking skills.

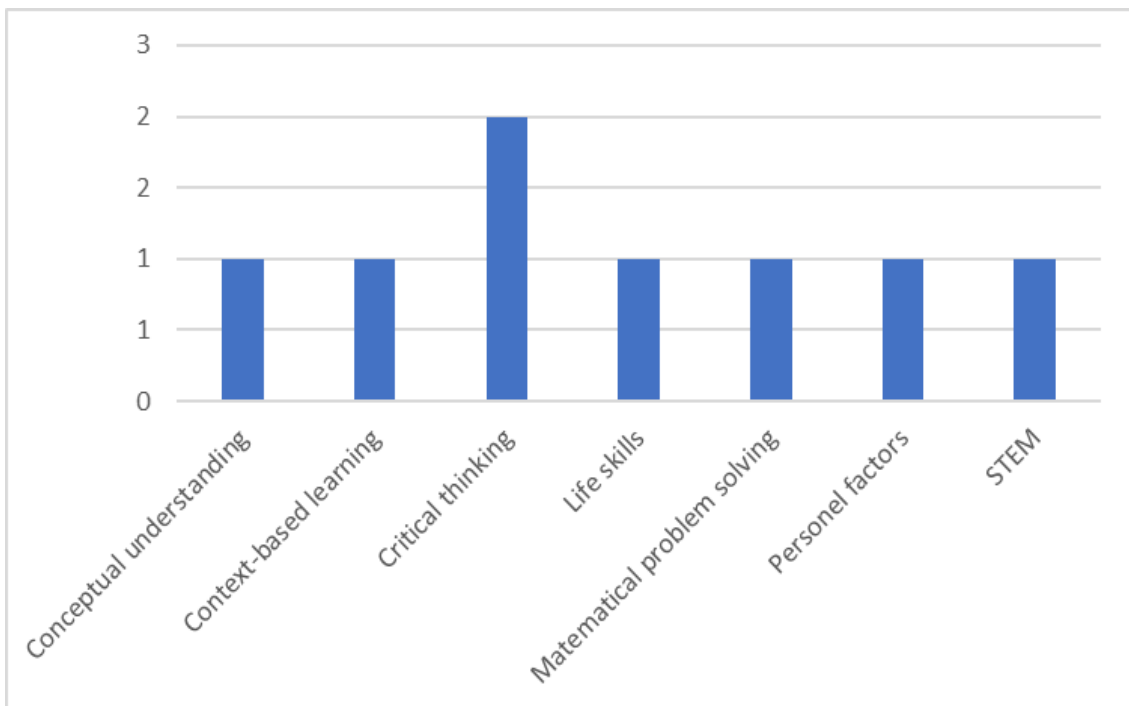


Figure 5. Distribution of Analytical Thinking Skills by Related Subjects

When Figure 5 is examined, it is understood that analytical thinking skills are associated with Conceptual understanding, Context-based learning, Critical thinking, Life skills, Mathematical problem solving, Personnel factors, and STEM subjects.

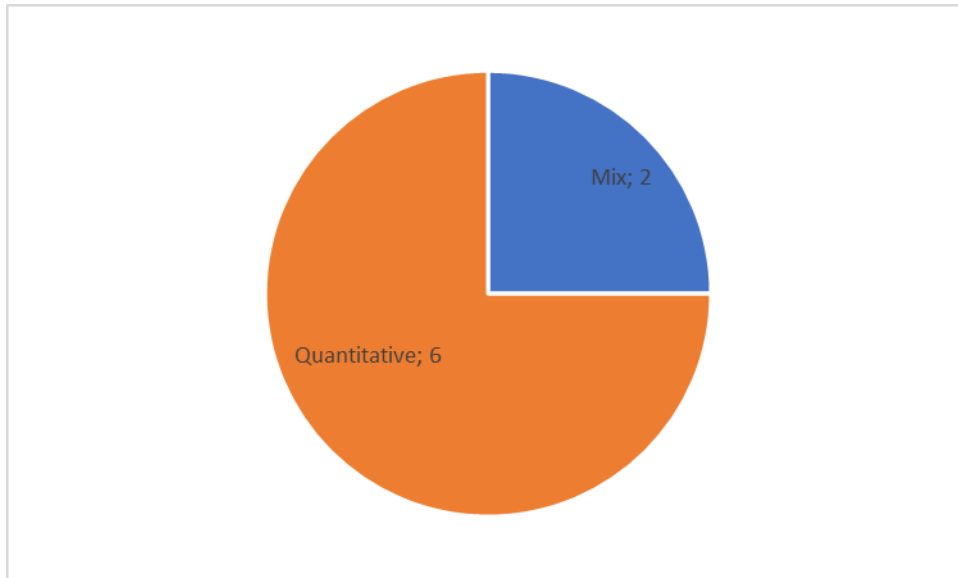


Figure 6. Distribution of Studies by Research Method

Figure 6 When examined, it is understood that a large proportion of the studies (75%) are in the type of quantitative research. No study is only in the type of qualitative research. The number of studies conducted using the mixed method is 2.

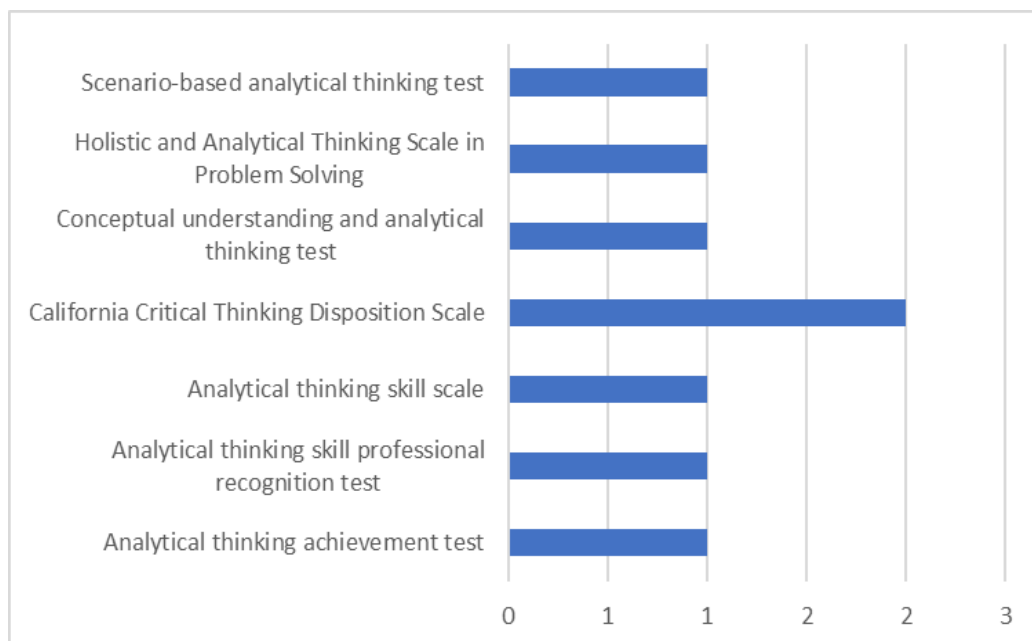


Figure 7. Distribution of Measurement Tools Used

Analytical thinking achievement test, Analytical thinking skill professional recognition test, Analytical thinking skill scale, California Critical Thinking Disposition Scale, Conceptual understanding and analytical thinking test, Holistic and Analytical Thinking Scale in postgraduate level research on analytical thinking skills. It is not understood that the Problem Solving and Scenario-based analytical thinking tests are used as measurement tools.

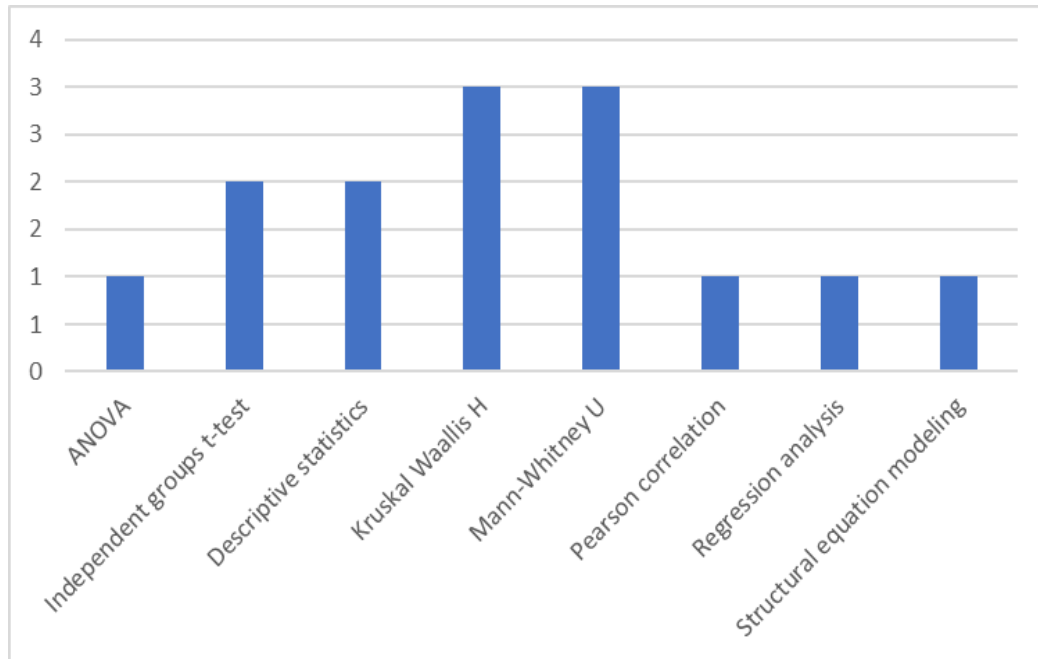


Figure 8. Distribution of Quantitative Analysis Techniques Used in Studies

When Figure 8 is examined, it is understood that analysis techniques such as ANOVA, Independent groups t-test, Descriptive statistics, Kruskal Wallis H, Mann-Whitney U, Pearson correlation, Regression analysis, and Structural equation model are used in studies related to analytical thinking skills. It has been observed that the number of advanced analysis techniques used is less.

Conclusion and Recommendations

In this study, postgraduate studies on analytical thinking in Türkiye were examined. In this way, the general trend of studies on analytical thinking skills has been revealed. According to the results obtained, it was determined that postgraduate research on analytical thinking skills started in 2009. Studies on the subject intensified in 2021. Analytical thinking is associated with higher-order thinking skills. Analytical thinking skill facilitates critical and creative thinking skills. Although analytical thinking skills are essential for individuals, it has been observed that a limited number of studies have been conducted on the subject.

According to the results obtained, it is understood that a large proportion (87.5%) of postgraduate studies on analytical thinking were published in Turkish. There is only one study published in English. It is understood that the studies carried out were mainly carried out with secondary school and university students. There are studies

conducted with high school students and teachers. There are no studies conducted with pre-school and primary school students.

Another conclusion reached in this study is that a large proportion of postgraduate studies (87.5%) on analytical thinking are at the postgraduate level. There is only one doctorate-level study on analytical thinking skills. In the studies carried out, analytical thinking skills have been addressed by associating them with subjects such as Conceptual understanding, Context-based learning, Critical thinking, Life skills, Mathematical problem solving, Personnel factors, and STEM. Studies need to investigate the relationship between analytical thinking skills and higher-order thinking skills such as creative thinking, reasoning, and practical thinking.

It was understood that the majority of the studies (75%) examined were in the type of quantitative research. No study is only in the type of qualitative research. The number of studies conducted using the mixed method is 2. In particular, there is a need for studies using qualitative research design. These studies can provide the opportunity to obtain deeper information from different sources on the subject.

Analytical thinking achievement test, Analytical thinking skill professional recognition test, Analytical thinking skill scale, California Critical Thinking Disposition Scale, Conceptual understanding and analytical thinking test, Holistic and Analytical Thinking Scale in Problem Solving and Scenario in postgraduate level research on analytical thinking skills It is not understood that the -based analytical thinking test is used as a measurement tool. It has been determined that these tools are mainly aimed at university students. Developing measurement tools that measure analytical thinking skills for different age groups may be recommended. It is understood that analysis techniques such as ANOVA, Independent groups t-test, Descriptive statistics, Kruskal Wallis H, Mann-Whitney U, Pearson correlation, Regression analysis, and Structural equation model are used in studies related to analytical thinking skills. It has been observed that the number of advanced analysis techniques used is less.

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Hispanic Serving Institution Student Success during a Pandemic

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Abstract: The Pandemic has affected the success rates among students in Higher Education. In general, Higher Education success rates are typically lower among minority groups. Considering the Pandemic effects in Hispanic Serving Institutions, this research study will focus on understanding the impact of the pandemic on currently enrolled undergraduate students in a Hispanic Serving Institutions and how technology may have played a role in their success. A qualitative approach will be used. Specifically, researchers interviewed 7 students whom were currently enrolled in a Hispanic Serving Institution in a Sociology class. The data will be analyzed using a grounded theory approach. Findings showed students saw technology as a contributing factor towards their success, the pandemic positively impacted their lives with the increase of flexible schedules, and males mentioned more barriers for success with high rates of struggling with anxiety. These data imply the need for a department focused on helping students succeed. Specifically, a department focused on providing all the resources needed by students in a Hispanic Serving Institution. These needs were amplified after the pandemic.

Keywords: Pandemic, COVID 19, Hispanic Serving Institution

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Introduction

The pandemic has negatively impacted students in higher education (Anderson, Rayburn, & Sierra, 2021; Chen et al., 2021; Habbak & Selko, 2021). Issues can range from internet speed, emotional well-being, feeling disconnected, and the list continues. Flores and Flores (2021) emphasized the importance to continue to research the effects of the pandemic in students attending Hispanic Serving Institutions, qualitatively. In this study we will focus on gathering data through interviewing students enrolled in a Hispanic Serving Institution. The

purpose is to better understand how the pandemic is impacting undergraduate students and how technology may play a role in success rates. The qualitative data will be analyzed using the grounded theory approach.

Literature Review

With the pandemic, negative effects among higher education students have been reported (Anderson, Rayburn, & Sierra, 2021; Chen et al., 2021; Flores & Flores, 2021; Habbak & Selko, 2021). Students have reported negative emotions as an outcome to attending a higher education institution during a pandemic (Anderson et al., 2021; Flores & Flores, 2021). Other negative effects in higher education brought on by the pandemic included internet issues (Chen et al., 2021). Students reported a feeling of disconnect (Anderson et al., 2021; Habbak & Selko, 2021) which is an important factor to succeed in higher education (Chong et al., 2021; Hug & Thiry, 2021). Chen et al. (2021) added that some students were living with families which led to lack of privacy needed to better focus on school work. The number of siblings in one household led a student to complete homework in the restroom. Habbak & Selko (2021) found students simply had trouble adjusting to the “new normal”. Some students reported limited access to educational resources (Anderson et al., 2021). While other students reported being financially impacted negatively (Biediger-Friedman et al., 2021; Flores & Flores, 2021). Overall, these data represent the need to further understand the impact of the pandemic on the success of students in higher education, especially students enrolled in Hispanic Serving Institutions (Flores & Flores, 2021).

Hispanic Serving Institutions and Student Success during a Pandemic

The Hispanic Serving Institution is an institution that serves primarily the Latinx population. Before the pandemic these institutions served the student population, in ways that support their personal needs to help them succeed in college (Miranda et al., 2021). Some of these support systems include food insecurities (Biediger-Friedman et al., 2021; Miranda et al., 2021). During the pandemic these services were decreased (Miranda, 2021). These services are needed in order to meet the needs of students to promote higher education success (Biediger-Friedman et al., 2021; Miranda et al., 2021). Additionally, implications for services to be offered to address psychological distress was prevalent (Flores & Flores, 2021; Hug & Thiry, 2021; Miranda et al., 2021). Hug and Thiry (2021) added that virtual support and student engagement would also contribute to student success in students enrolled in Hispanic Serving Institutions.

Technology and Student Success during a Pandemic

Although technology is a huge factor incorporated in higher education during the pandemic, research focused on how technology supports student success during a pandemic was limited. Researchers mainly focused on the online teaching experiences among faculty during a pandemic (Moessen et al., 2021; Arnold, Ulber, & Vogel, 2021). Akcil & Bastas (2020) focused on how technology impacted students in higher education, in Cyprus. They found students who demonstrated digital citizenship behaviors had positive attitudes towards e-learning. Social exchange was noted to be an issue, lacking, during the pandemic among students in an online learning environment (Arnold et al., 2021; Moessen et al., 2021). Arnold et al. (2021) added that students had more issues

with self-organization and issues with privacy due to living with flat mates. Social connection or engagement seem to be a reoccurring theme (Anderson et al., 2021; Arnold et al., 2021; Habbak & Selco, 2021; Hug and Thiry, 2021; Moessen et al., 2021). To better understand how the pandemic impacts the success of students enrolled in a Hispanic Serving Institution, a qualitative approach using grounded theory to analyze the data will be applied in this study.

Grounded Theory

Creswell (2009) introduced grounded theory for qualitative research, such as this one, to formulate a theoretical explanation after all the data is gathered and analyzed. Furthermore, Green (1998) explains how grounded theory was developed by Anselm Strauss and Barney Glaser to assist with developing a theory with data gathering through research. A coding process is applied to gather data, in this case interview conversations, to better analyze the data and identify patterns that support a theory. Lastly, Elliott and Higgins (2012) defend the use of grounded theory in higher education and suggest focusing on how inductive enquiry contributes to new knowledge, importance of grounded theory questions used in data gathering, focus on research-theory link, and how grounded theory provides an inductive and deductive means to generating a theory in the field. Overall, grounded theory is the best suited qualitative approach to better understanding how the pandemic influences success rates among students enrolled in Hispanic Serving Institutions. The development of a theory from this research may better serve student's success rates in the future.

Method

The purpose of this research is to better understand the influences on students enrolled in a Hispanic Serving Institution during a pandemic that support or hinder their success rates. With this in mind, after Internal Review Board approval, students were sought out for interviews in a Hispanic Serving Institution, located in a South Texas region. The Sociology Departmental faculty were contacted to help recruit students over the age of 18. No extra credits were offered for compensation. Students contacted the researcher to schedule interviews, that lasted between 20-30 minutes.

Design

Students who scheduled an appointment were sent an internet speed test link and the consent form to prepare for the upcoming interview. Upon logging in to the online interview, using the team's and zoom application, students were read the consent form, and verbally consented and continued with the research study with the option to end the interview at any time. Lastly, students completed an online demographic survey for future research use. Students were then asked to discuss contributing resources helping their success in Higher Education, the lack of contributing resources inhibiting success in Higher Education, technological contributing resources helping their success in Higher Education, lack of technological resources preventing success in Higher Education, Pandemic related resources that helped their success in Higher Education, and the lack of Pandemic related resources that inhibited their success in Higher Education. Please see appendix A for more

information. The dedoose program was used to analyze the data. All excerpts/texts were imported. Demographic data were entered as descriptors and attached to each assigned excerpt. Codes were then created to represent each question asked. Child codes were created under each code. The dedoose program allowed for the data to be normalized or weighted based on overrepresentation by one group over the other. Additionally, the dedoose program allowed to analyze the codes as percentages. The initial analysis was focused on demographic data. Then the most discussed codes were sought out through a cloud analysis. Finally, a code co-occurrence analysis was applied to see the most common discussed codes and child codes.

Population and Sample

For this qualitative research study, students enrolled in a Hispanic Serving Institution during a pandemic were the population. Because the pandemic limits access to students, the recruitment of participants was heavily reliant on faculty willing to announce the research opportunity in their online course shells. Eventually, Faculty returned to campus after the first month of the semester, some students were informed about this research study in class. Faculty from the Sociology department were sought out, due to convenience. Thus, a convenient sample was used. A total of 7 students scheduled and completed interviews. Of the seven students, all were first generation students, 5 were female, 2 were male, 3 were Sociology majors, 1 was a Social Work major, 1 was an Organizational Leadership major, 1 was a Psychology major, and 1 was a Technology major.

Results and Discussion

The demographic analysis yielded a few gender themes. Both genders mentioned Pandemic Barriers for success in a Hispanic Serving Institutions at same rates. Females mentioned technological impact on success and technological resources impact on success at higher rates. Males discussed direct and indirect influences on success, online learning impact on success, and positive contributions the pandemic provided to student's success at higher rates. Lastly, males discussed barriers for success, adjustment issues, and stress issues at higher rates.

A quick pack code cloud, demonstrated students interviewed focused on Student Success Barriers in Hispanic Serving Institutions the most. Then students focused discussing the technological impact on success, direct influences on success, the Pandemic positive contributions to success, and technological resources and their contributions to success in a Hispanic Serving Institution. As per the code co-occurrence analysis, the most discussed topic was the Hispanic Serving Institute barriers on success. The discussions in this area included lack of socialization that is a typical contributing factor in succeeding in a classroom. Lack of resources was also discussed. Resources in this case, focused on websites or information guiding students on how to be successful. Students also discussed issues in adjusting to the new way of learning. Typically, the demands of multiple roles under the same household was mentioned as a common adjustment issue. Other adjustment issues included adjusting to the new online platform, English was a second language, and stress related to the new way of life.

Lastly, students mentioned a lot of negative mindsets, stress, and issues like the war that distracted them from focusing on being successful.

Students then focused on Direct Influences on Success in Hispanic Serving Institutes. Details included financial aid resources, support from family and for child support, and resources. Resources was a child code that was most commonly discussed and included influences that directly helped students to succeed, included online citation resources, financial aid resources, library resources, support for childcare, advising provided, and resources provided on blackboard.

Similarly, Technological Resources that contributed to success included communication devices and apps, online resources, and technological devices for work. Popular child codes discussed under Technological Resources that contributed to success included Technological Devices for Work and then Communication Devices and apps. Technological Devices for work included the internet, computer, cell phones, online books at the library, scanners, blackboard messages, laptops, tablets, and cell phones that one can complete work on. Communication Devices and Apps included cell phones, blackboard messages, and the pronto app.

Needless to say, the next popular codes or topics discussed were focused on Technological Impact on Success and Pandemic Barriers for success in Hispanic Serving Institutions. Online resources and searches, the online platform, connecting online, and wifi and wifi apparatuses were the most discussed items that helped students succeed. The Pandemic Barriers for success in Hispanic Serving Institutions include the loss of family or friends, lack of socialization, lack of resources to help students in need of laptops, hotspot devices, and tablets, stress, and technical issues.

Amongst the least topics discussed were Positive Contributions to success in a Hispanic Serving Institution During a Pandemic with a child code of online learning. The positive contributions the pandemic provided included flexible schedules and the option to learn online. The option to learn online during a pandemic helped participants transition to online learning and most participants were more dedicated to their academic career after this transition.

Limitations

Limitations for this study included the lack of participants volunteering without incentives. During a pandemic, incentives will assist any study requesting time away from a student's busy schedule. Additionally, students were not asked if they were 18 years of age or older during the interviewing process. However, during the recruiting stage all volunteers were informed of the age requirement. Lastly, students were not asked about their academic success. Follow up questions was an option.

Conclusion

The focus of this study is to better understand the effects of the pandemic on undergraduate students who are currently enrolled in a Hispanic Serving Institution and how technology played a role in their success. This research study included students from a Hispanic Serving Institution. Participants were interviewed to gather pertinent information to better understand success in a Hispanic Serving Institution during a Pandemic. The sample was a convenient sample. Dedoose was the program used to analyze the data and apply grounded theory. Findings include barriers, technological impact on success, technological resources and the impact on success, direct influences on success, and positive contributions the pandemic has provided in a Hispanic serving Institution.

Recommendations

Based on the findings, the negative impact of the pandemic was mentioned to increase “fear and lack of resources.” Thus, more resources should be made available to students via a website or an assigned staff member. Other students mentioned, “resources on helping students to be successful,” negatively influenced their success in college during the pandemic. Specifically, advertising resources must be modified to target males with barriers such as adjustment issues and stress issues. Some comments related to stress included, “there is still stress...about the war,” “fear of lack of resources, stress, and sadness due to family losses,” “my mindset sometimes becomes negative.

There’re days where I don’t want to do a single thing. But I pushed myself to do it,” “I don’t think I have something that affected me negatively, probably sometimes my mindset.” Both males and females need more assistance dealing with the lack of socialization and lack of resources available to them, “the lack of contact with other people, sometimes affect my English.” Another student mentioned, “relationships between people changed.” Although, technology was a contributing factor in success, resources must be made available to all students to maintain these effects. Again, a staff member or office should be available to provide technological resources needed such as wifi apparatuses, laptops, or tablets.

A student, “wished that the school provided hot spots, laptops, and tablets,” not knowing the library department offered these resources at the time of the interview. Direct influences must continue or start to support financial aid services, tutors for online citation needs, enhance or maintain library resources, provide support for childcare, maintain or enhance advising, and maintain or enhance resources provided on blackboard. The focus on contributions provided by the pandemic were on the online platform and sustaining that way of learning to maintain a demanding lifestyle imposed by the pandemic. The online platform, itself, is simply an option that must be sustained through stellar customer service that should focus on support for and from multiple resources.

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Profile Pictures on Social Media: Users Views on Profile Pictures

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Abstract: Social networking sites are virtual communities that allows users to interact with other users while being online. Social networking sites focus on creating online communities of individuals who share interests, activities and interested in exploring the interests and activities of others. Most social networking site are web-based environments and provide a variety of ways for users to interact. Social networking has drastically changed the ways individuals connect one another by which individuals make and keep up their social relations on the Internet. Social networking sites allow individuals to create their own profiles. User created profiles are generally open to the public who has access to the Internet. Furthermore, users can also share their profile with friends and other people in online communities. In today's online world, choosing profile picture is a serious decision. Profile picture is a visual that reflects individuals' intention to deliver a certain message to others. The profile picture selection is a sole decision determined by the individual who owns the social media page. The purpose of this research is to investigate the reasons of changing their Facebook profile pictures of students who are enrolling to a higher education institution. Furthermore, this study aims to examine whether there was a difference in the reason to change profile picture on gender. The data 112 university students were participated to the study. The results showed that there is no significant difference between the frequency of use of users' profile picture type and gender. In addition, there is no difference found between the usage times of the profile picture content between male and female participants. However, a positive relationship was found between the duration of daily use and the year of membership.

Keywords: Social Networking Site, Facebook, Profile Picture, Social Media

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Introduction

With the increase in technological developments in our world, the internet has progressed rapidly and has changed our education as well (Noroozi & Sahin, 2022a, 2022b). In 2004, Harvard University student Mark Zuckerberg launched the Facebook social networking site, which has spread rapidly and reached a large number of users around the world (Alaimo & Kallinikos, 2017). Web 2.0 is the medium that enables us to move from one-way information sharing to mutual and simultaneous information sharing. This feature of Web 2.0 has also led to the birth of social media. People spend most of their time in social media environments (Ligia et al, 2011).

The emergence of social media is based on Web 2.0. Web 1.0 was a static form of the Internet. However, the dynamic form of the Internet Web 2.0 users can simply publish content in various visuals, videos and audio elements (Celli et al, 2014). The content of social networking platforms is entirely determined by users and users can interact with each other through social media platforms.

Social networking sites (SNSs) are sites that allow individuals to create their profiles in a public or semi-public registered system, share a link, show the list of other users, and see the relationship lists of the people in the system, where people in online communities share their likes, activities and share messages, e-mails, discussion groups, video, voice chat, and files with each other over the network. One of the purposes of users in social networking sites is to include people they rarely meet face-to-face or have not met for a long time in their social networks (Alharthi & Zhang, 2021; Boyd, Ellison, 2007; Ghimire, 2022; Kaban, 2021a; Klein, 2022; Marbán & Mulenga, 2022; Onat Kocabiyik, 2021; Ozturk & Ozturk, 2022; Panaoura, 2017).

Facebook

Facebook was founded on February 4, 2004 by Mark Zuckerberg, a student at Harvard University, Facebook was initially designed only for Harvard students to communicate with each other. However, Facebook, which did not fit into its shell, soon incorporated schools around Boston. The famous social media platform, which included Ivy League schools as soon as 2 months after its establishment, spread to all schools in the US in its first year (Brügger, 2015; Giri & Rana, 2022; Kaban, 2021; Karademir Coskun, Erdogdu, & Kokoc, 2020; Marbán & Mulenga, 2022).

At first, only school e-mail addresses (.edu, .ac.uk, etc.) could be used to become a member of Facebook, which was established to exchange information. Over time, high schools and some important companies started to join Facebook. By September 11, 2006, Facebook was open to the world with all e-mail addresses and age restrictions (Boyd & Ellison, 2007; Hamasaiid, 2021).

The main purpose of Facebook is for people to communicate with each other and exchange information. The famous social media site, which in the early days helped friends who had not seen each other for years to find each other, now offers much more to its users.

Games can be played and live broadcasts can be made on Facebook, which is used by millions of people. It is possible to make video calls to your loved ones over your internet connection or chat via Facebook Messenger.

On Facebook, users have profile photos to express their gender, race, color, height, weight and all other physical characteristics and appearance, such as clothing, to other users in the first moment. Simple profile options include gender, birthday, political views and religious beliefs. Other options include contact and address information, relationship status, personal interests, education and employment status.

Method

The purpose of this research is to investigate the reasons of changing their Facebook profile pictures of students who are enrolling to a higher education institution. Furthermore, this study aims to examine whether there was a difference in the reason to change profile picture on gender. The data 112 university students were participated to the study.

In this study, a 5-point Likert scale questionnaire was applied to determine university students' daily usage time of Facebook social networking sites, profile picture contents, and reasons for changing profile pictures. In this respect, the research is a descriptive study and the general survey model, one of the descriptive research methods, was used. General survey models are surveys conducted on the whole universe or a group of samples or samples to be taken from it in order to make a general judgment about the universe in a universe consisting of a large number of elements. In addition, it was also examined whether the students' opinions change according to the demographic characteristics of the students. In this respect, the research can also be called a relational survey model (Büyüköztürk, et al., 2010).

Results

The Facebook survey was administered to 112 randomly selected higher education students studying in different departments. The demographic characteristics of the participants, the number of years they have been using their Facebook accounts and their daily usage amounts are given in the tables below.

Table1. Gender Distribution of Participants

	Frequency (f)	%
Male	55	49.1
Female	57	50.9
Total	112	100

The age range of the participants varied between 18 and 25. In addition, the mean age was calculated as ($\bar{x}=20.61$) and the deviation of the age distribution as ($S=1.52$). (see Table 2)

Table 2. Age Distribution of Participants

	N	Min.	Max.	\bar{x}	S
Age	112	18	25	20.61	1.52

Table 3. Duration of Participants' Facebook Account Ownership

Ownership time	Frequency (f)	%
6 months	6	5.4
1 year	4	3.6
2 years	27	24.1
3 years +	75	67
Total	112	100

It was found that the participants predominantly used their Facebook accounts for more than 3 years (67%). The other option of 2 years was found (24.1%). 91 percent of the participants have been using their Facebook accounts for at least 2 years (Table 3)

Table 4. Average Time Respondents Spend on Facebook Per Day

Time spent per day	Frequency (f)	%
30 min or lower	33	29.5
Between 30 min. & 1 hr.	37	33
Between 1 hr & 2hr	28	25
Between 2 hr & 3hr	10	8.9
3 hr or more	4	3.6
Total	112	100

33% of the participants spend between 30 minutes and 1 hour a day on Facebook. This rate is 29.5% for those who spend less than 30 minutes. More than 50% of the participants spend at most 1 hour. Those who spend between 1 hour and 2 hours constitute 25%, while those who spend more than 3 hours are only 3.6%. (Table 4)

Table 5. Distribution of Users' Frequency of Using Profile Picture Type by Gender

Profile photo type	Gender	N	\bar{x}	S
Own photo	Male	55	4.07	1.01
	Female	57	3.86	1.09
Friend photo	Male	55	2.44	.63
	Female	57	2.51	.92
Family photo	Male	55	1.67	.72
	Female	57	1.79	.75
Celebrity photo	Male	55	1.42	.93
	Female	57	1.12	.38
Cartoon pictures	Male	55	1.18	.38
	Female	57	1.53	.82
Funny images	Male	55	1.22	.45
	Female	57	1.40	.88
Nature photos	Male	55	1.35	.67
	Female	57	1.49	.88
Pet photo	Male	55	1.07	.26
	Female	57	1.12	.33

In Table 7, the most frequently used profile pictures were given to the users, and the users answered the time of the profile pictures they used with a 5-point Likert-type scale (1=never, 2=rarely, 3=sometimes, 4=usually, 5=always). According to Table 5, it was determined that men (x=4,07) and women (x=3,86) generally use their own pictures. The least common type of profile picture used by females is pictures of famous people, while the most common profile picture used by males is pictures of pets.

Items related to the type of profile picture have 4 factors. Among the most important factors, the first factor explains 25.8%, the second factor explains 21%, the third factor explains 15.2%, and the last factor explains 14.5%. After this factor analysis, the items were redefined. As a result of the analysis after the rotation process, it was concluded that this question stem could be explained by 4 factors. (see Table 6).

Table 6. Factor Analysis of the Items Related to the Type of Profile Picture in the Questionnaire

Item no	Factor common variance	Factor loading value	Load Value After Rotation			
			Factor-1	Factor-2	Factor-3	Factor-4
A1	.589	.585	-.259	.430	-.558	.158
A2	.736	.120	-.054	.832	.085	.184
A3	.656	.176	.209	.729	-.047	.281
A5	.837	.784	.876	.100	-.101	.223
A6	.797	.838	.852	-.018	.018	-.051
A7	.862	.428	.006	.156	.907	.120
A8	.876	.347	.133	-.005	.041	.925
Explained Variance						
Total:%76.5						
Factor--1:%25.80						
Factor-r-2:%21.0						
Factor--3:%15.2						
Factor--4:%14.5						

Items related to the type of profile picture have 4 factors. Among the most important factors, the first factor explains 25.8%, the second factor explains 21%, the third factor explains 15.2%, and the last factor explains 14.5%. After this factor analysis, the items were redefined. As a result of the analysis after the rotation process, it was concluded that this question stem could be explained by 4 factors.

Table 7. T-Test Results between Men and Women in Terms of the Profile Picture Used

Gender	N	\bar{x}	S	sd	t	p
Male	55	1.84	.25	110	1.69	.092
Female	57	1.94	.36			

There is no significant difference between the frequency of use of profile picture type and gender. $t(110)=1,69$, $p> ,01$. (Table 7). There is a moderate relationship between years of Facebook use and daily usage time. $r=0.42$, $p< ,01$

Table 8. Findings on Reasons for Changing Facebook Profile Picture

Profile picture reasons for change	\bar{x}	S
National days	2.80	1.35
Current events	2.50	1.13
New Photo	3.16	1.37
New trip photo	3.12	1.25
Organized collective reaction	2.35	1.35
Monotonous	2.59	1.29

In Table 10, users are given some situations related to the reasons for changing profile pictures with a 5-point Likert-type scale (1=strongly disagree, 2=disagree, 3=undecided, 4=agree, 5=strongly agree). Among these situations, the participants have the highest average as the reason for changing their profile pictures when they take new pictures. On the other hand, the least average is the case of organized joint reactions.

Discussions & Conclusions

The purpose of this research is to investigate the reasons of changing their Facebook profile pictures of students who are enrolling to a higher education institution. Furthermore, this study aims to examine whether there was a difference in the reason to change profile picture on gender. The data 112 university students were participated to the study.

The results showed that there is no significant difference between the frequency of use of users' profile picture type and gender. In addition, there is no difference found between the usage times of the profile picture content between male and female participants. However, a positive relationship was found between the duration of daily use and the year of membership.

The fact that Facebook, one of the fastest growing social networking sites, is one of the most preferred social networks among higher education students is seen as one of the biggest factors for its use as a teaching tool in higher education. It is known that the number of Facebook users in Turkey quadrupled between 2008 and 2011 and the majority of users are young people in higher education.

In the study, it was determined that the majority of young people have been members of the social networking site Facebook for more than 3 years and that they spend between 30 minutes and 1 hour on average.

Gender: Refers to the roles and responsibilities socially assigned to women and men in different cultures, at different moments in history and in different geographies. Gender is briefly defined as the roles and responsibilities socially assigned to men and women. In the study, no difference was observed depending on gender. A positive relationship was found between daily usage time and membership year.

The most striking answer was "new picture" and "new trip photo" among the reasons why users frequently change their profile pictures on Facebook. Participants changed their profile picture when they took a new photo. Participants did not feel the need to change their profile picture when participating in organized reactions.

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The Foundation for Interdisciplinary Team Learning in the 360 Degree Global Ed Model

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Abstract: The 360 Degree Global Education Model (360 Global Ed Model) provides a comprehensive framework for creating meaningful interdisciplinary student team learning through international service learning. Providing successful multi-disciplined undergraduate education necessitates creating a foundation for productive team-science based learning between disciplines. The pedagogical foundation employed by Breitreuz and Songer within the 360 Global Ed model creates a shared values student dialogue for enhancing undergraduate team learning and performance. This paper provides a summary of the 360 Global Ed Model, a discussion of methods used to create a student shared dialogue (*Team Learning Foundation*), lessons learned, and student outcomes. Methods for shared dialogues include creating a team-defined mission, team-defined behavioral standards, building shared cultural understandings and expectations for developing cultural intelligence, and developing realistic expectations for interpersonal understandings through use of self-assessments. Student team-led projects provide an authentic context impetus for implementing the team learning foundation.

Keywords: Interdisciplinary, Team Learning Foundation, 360 Global Ed Model, International

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Introduction

This paper provides a foundation of methods used to create a student shared dialogue or *Team Learning Foundation*, for an international interdisciplinary service-learning class for undergraduate students. The overall framework, rationale, lessons learned, and student outcomes are discussed. Methods for creating a shared dialogue with students, include creating a team-defined mission, facilitating team-defined behavioral standards, building shared cultural understandings and expectations for developing cultural intelligence, and developing

realistic expectations for interpersonal understandings through use of self-assessments. Student team-led projects provide an authentic context impetus for implementing the team learning foundation.

Background

In 2012, Breitzkreuz and Songer partnered with Peacework Inc., and the Belizean Ministry of Education to create an interdisciplinary, service-learning course for students at Boise State University. Through Peacework Inc., a non-profit organization, the Belizean Ministry of Education invited the authors' undergraduate interdisciplinary service-learning class to partner with elementary schools in Belize. The facilitative efforts of Peacework Inc., offered coordination and logistical support to the interdisciplinary cross-cultural teaching team from the university. Peacework's long standing collaboration with the Belizean Ministry of Education provides invaluable in-country stability for the program. The logistical support allows the interdisciplinary teaching team leaders to focus on creating a successful a class framework, in-depth student development, and subsequently successful project outcomes.

The 360 Degree Global Education Model

The *360 Global Ed model* is an evolving education model that brings together a variety of educational concepts to form an educational approach for an international service-learning class that impacts students' knowledge, attitudes, and skills, through partnerships with an international community. Since 2013, six iterations of model implementation demonstrate effectiveness for educating socially responsible global citizens. The authors describe the theoretical underpinnings of the model in previous work (Songer and Breitzkreuz, 2014).

The 360 Global Ed model for international service learning includes a theoretical framework, educational environment, academic coursework, and evidence-based outcomes. The current higher education paradigm emphasizing the broader context of globalization and inter-professional collaboration in producing effective solutions to society's problems motivated model development. This higher education purview necessitates continued investigation of innovative interdisciplinary approaches for higher education. The 360 Global Ed model is offered in contrast to the traditional silo-based, discipline specific models.

The first challenge in forming the international-service learning course is clearly defining the term interdisciplinary. Terms such as interdisciplinary, multidisciplinary, and transdisciplinary are often used interchangeably, but in fact are defined differently. *Cross-disciplinary* is a generic term used in discussing any or all approaches to collaborations of disciplines. Hubbs et al. (2020), notes that cross disciplinary work can involve both individuals and groups. The term *multidisciplinary* applies when the inputs are only slightly varied (Multidisciplinary, 2021). A multidisciplinary example from healthcare would involve surgeons, oncologists, physical therapists, nurses, and social workers who all may offer different insights to provide optimal care for a cancer patient. In contrast, an *interdisciplinary* approach involves two or more specific disciplines working together to solve a problem with each discipline bringing a unique perspective. In the case of this class,

colleagues from the School of Nursing and College of Engineering (Breitkreuz and Songer respectively) made up the interdisciplinary leadership team. These disciplines have markedly different purposes, processes, outcomes, value systems, and different, yet similarly high ethical standards. Collaborations on this level involve greater deliberation and consideration to succeed. A *transdisciplinary* approach is used when collaborators combine their work to create a new field, and the outcome of this work contains new information (Hubbs et al., 2021). Songer and Breitkreuz chose the interdisciplinary definition. The purpose of the introductory class was to create opportunities for students from any program on campus to come together to create solutions for international partners, based on the partners needs and requests. Participating students are primarily undergraduate students from any major on campus.



Figure 1. 360 Degree Model for Educating Socially Responsible Global Citizens (Songer and Breitkreuz 2014)

Hubbs et al. (2021) describes a powerful dialogue method for high-level multi-disciplined researchers to collaborate and communicate expectations across the disciplinary divides. The foundations of successful dialogue are clear communication standards and philosophical understandings (Hubbs et al, 2021). Within the context of interdisciplinary curricular efforts, the 360 Team Learning Foundation discussed below addresses these same issues.

360 Team Learning Foundation: A Basis for Shared Dialogue

Issues in creating inter-disciplinary international service-learning classes parallel Hubbs's clear communication standards and philosophical understandings. An initial challenge is bringing leaders from different disciplines together who understand the philosophical differences and foundations of their discipline and subsequently, creating a language to communicate across these divides. Breitkreuz & Songer created a multifaceted approach to facilitate student communication about the common work of the course, the content of international service, and the projects that were undertaken. This foundational level of cross-disciplinary team learning can be applied in any program and is particularly useful for undergraduate education. The resulting *360 Team*

Learning Foundation is a curricular platform that facilitates shared dialogue among diverse student groups. It involves sound educational theory and iterative practice with the primary concepts of cultural intelligence, teaming-work, self-understanding and interpersonal dynamics, conflict management, shared community ethics and standards, and a model for servant leadership. Figure 2 illustrates the components of the 360 Team Learning Foundation model.



Figure 2. The Team Learning Foundation

Cultural Intelligence

The first and most basic aspect of the interdisciplinary international service-learning course was understanding cultural intelligence. The framework used was the one offered by Livermore et al. (2015). After completing a short CQ self-assessment, the Cultural Intelligence framework offers students the opportunity to examine their personal CQ score. Students examine and learn to practice various aspects of the CQ framework through weekly pre-trip in-class exercises. Students learn CQ knowledge by studying Belizean culture, food, music, art, the economy, healthcare systems, education, and politics. Integrated discussions identifying reasons for their motivation to participate in the international service-learning class reinforce the concepts of cultural intelligence. Additionally, planning and practicing cultural strategies prior to and during the in-country experience demonstrates the final aspect of CQ, CQ action. CQ action is defined as operating successfully in a different culture using cultural intelligence (Livermore, 2015).

During the 10-day service trips, students use evening free-time to debrief the work of the day and/or hold informal planning and strategy sessions for the next day of CQ action and project work at the elementary school.

Students learn that all aspects of cultural intelligence are applicable in a multi-layered cross-cultural setting. Not only do students experience the cultural differences and similarities between US and Belizean cultures, values, and aspects of everyday life, they witness similarities and differences between Belizean and U.S. school systems and even between their various disciplines. Students who were health science, and education majors excelled in leading the day-camp offered to Belizean school children (alongside their teachers), and students from the Science and Engineering disciplines exceed in planning and leading and implementing the small renovation projects implemented at the school's request. The students, however, all worked together and learned from their peer leaders, which proved to be a basis for developing an understanding of interdisciplinary teaming.

Teaming Work

Introducing a teaming framework early in the curriculum creates the mission and motivation for the student groups to “stick together” and finish their projects. The Team Learning Foundation uses *Collaborative Way* model for teamwork provided by Fickett and Fickett (2006). This model encourages students to listen generously to all ideas, speak straight, or be forthright with one another, be encouraging, honor commitments to the project, and respect and appreciate the contributions of the others. Students were encouraged to reflect on their competence and progress in keeping their commitments to the project throughout the in-country experience. Prior to departure, students create their own mission statement or in terms of the Collaborative Way model, the “up to”. This mission provides the focus and purpose of the trip. This in-class activity provides the first true opportunity for student dialogue and group cohesion.

As expected, each year the mission varies. For example, in 2016, the group decided the mission was to: “increasing awareness of our global situation by engaging with community partners and taking responsibility for ongoing relations”. Though each year was different, each year the mission was team defined, which developed cohesive individual buy-in.

Even though the model provided a positive group focus, we learned we also need to develop trust and overcome common team dysfunctions. Lencioni (2005) describes these as building trust, acknowledging, and managing the role of conflict, involving everyone in decision making, holding each other accountable and holding the team accountable. The first strategy to build trust was offered during classroom sessions by having students do small group work during preparation assignments prior to departure. These include group presentations on various aspects of Belize, planning the project they would implement in Belize, and weekly CQ Question of the day challenges. Other activities included sharing personal stories and strengths, and team-building activities like *Helium Stick Challenge* (Priestly, 2017).

Self-Understanding and Interpersonal Dynamics

Self-awareness and interpersonal dynamics are critical components of successful teaming, particularly in interdisciplinary environments. Strategies for student growth in understanding their personal working strengths

and those of their classmates include the implementation of two established behavioral self-assessments. The first was the DISC Personality Assessment (What Is the DiSC Assessment? n.d.). The DISC Personality Profile tool helps to users understand a various personality factor that impact human dynamics and team function. The DISC offers users a common language, user-friendly assessments, and insights into the four major personality types they present. The personality factors proposed offers users a chance to consider actionable insights into dealing with personalities other than the dominant one the student identifies with.

Additionally, students completed the more detailed Strength Finders 2.0 assessment (Top 5 CliftonStrengths | En-us - Gallup, n.d.). Strength Finders 2.0 basic assessment for students offered insights into the student's top five strengths. For each class, students unanimously agreed to share their personal results so the whole class could see everyone's results. The students learned that others had strengths of encouraging, including, achieving, analyzing, strategizing, focusing and many more (Strengthsfinder 2.0: A New and Upgraded Edition of the Online Test from Gallup's Now Discover Your Strengths) [by: Tom Rath] [Feb, 2007], 2022).

Making the positive attributes of the team available for everyone were remarkable. The petty difficulties teams often deal with (such as the always late one) were mostly put aside considering these positive attributes, and the understanding that they could count on their teammates and even more so, how they could count on their teammates came to the front of the team dynamic. Suddenly, the engineering student with strengths in analyzing was useful in describing for the group the details of how the group would manage a small construction project in a foreign country, and the strength was appreciated. Those with interpersonal relationship building strengths were appreciated as they could easily navigate a classroom of 7-year-olds and negotiate relationships with the Belizean teachers. Everyone had a strength, and everyone had a purpose, and the minor frustrations of long workdays were buffered by appreciation of each part of the personality puzzle coming together to complete the projects the team had taken on.

Conflict Management

To manage team dysfunctions (which vary from year-to-year), students were taught fundamental principles of conflict management. First, the professors asked students to brain-storm and list the unacceptable methods for solving conflict. Students creates a list of the behaviors they considered unacceptable. Students then compiled a similar list of acceptable methods of solving conflict. The lists were discussed and narrowed down to the most egregious and acceptable behaviors. The lists were typed up as the acceptable and unacceptable behavioral guide. The professors acted as facilitators and the group of students subsequently held each other accountable for managing conflict. Figure 3 illustrates the results of one group's approach.

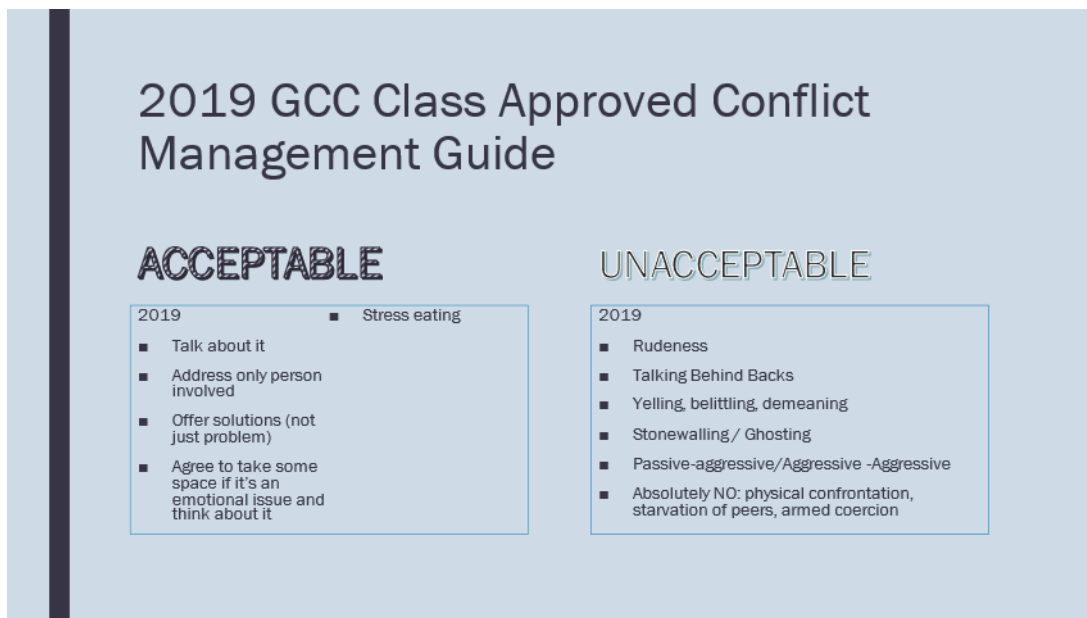


Figure 3. Class List of Acceptable/Unacceptable Behaviors

During the conflict management class session, students were also given insights into various types of conflict management/negotiation personality styles. The simple three negotiator style list is in no-way a comprehensive review of conflict management but offers an overview that is easy to understand. The Black Swan Group Negotiator Personality types are highlighted and discussed in class to help students understand that just as individual possess personality strengths, they also demonstrate different approaches to solving problems and negotiating solutions to problems (The Black Swan Group, n.d.). The class conversation opened the door, so to speak, to address the fact that conflict can and should be managed in a respectful and adult manner. Students learned that there are many different ideas, opinions, styles, of managing conflict and this is a normal part of life. Developing adult conflict skill is a normal part of life is essential for undergraduate students (Lencioni, 2005).

Shared Community Ethics and Standards

By creating acceptable and unacceptable group norms classes created a standard and ethic. The foundational ethical standard for the class was the university code-of-conduct for students studying abroad. Prior to acceptance into the course, students sign an agreement to recognize and adhere to the University policy.

Servant Leadership

The final component of the Teaming Learning Foundation is the concept of servant leadership. Principles of servant leadership involve building community, commitment to the growth of their team members, stewardship, foresight, listening, empathy and healing, and foresight are introduced and discussed. This assists team member realization that when in a leadership role, students have a responsibility in the growth of their team members, as opposed to an authoritarian approach to directing project activities (J. C. Hunter, 2004).

Reflections: A Source of Student Outcomes

Reflections from the students following the trip often provided insights into outcomes that went far beyond the surface projects completed:

“The true growth lies in the interaction with each other, as neither truly understood each other’s culture, and blindly conversed without any real idea of social or verbal cues. We each impacted each other in ways that reach far beyond the material realm, which lead me to my conclusion. The more we can learn from and teach each other, the more we can understand why we do what we do, rather than just the basic understanding, the more we can become a unified front against global issues.”
Engineering Student 2019.

“One of the main problems that we encountered (or could have encountered more often) because of being a multi-disciplinary team was butting heads due to having different opinions. Seniors may have different ways of viewing a problem and its solution than a freshman, and an education major may have a different teaching style in the classroom than a healthcare major. Thus, it’s easy for conflict to arise this way because most of the students have different opinions than each other. Honestly, I did not see much, if any, signs of conflict within our group as we worked on our construction projects and lesson plans. I found it very refreshing how seemingly everyone worked together so well and were open to each other’s ideas. It created such a strong sense of teamwork and, I think, was such a key reason why we ended up getting so much done on the wall and bathroom.” Pre-med sophomore 2019.

Working in a multi-disciplinary group was a great opportunity for growth. We were faced with some challenges throughout the week. One of them being that the science projects were a lot bigger of a task than we imagined. Because we all came from different strengths, we had different ways to go about it. Though, we had the opportunity to really use each of our strengths to help solve this. Nicole and I both are very strong in adaptability, so we were able to act on the spot to help for problems such as running out of things to do. We were great at coming up with new activities for them to do. Natalie is strong in “strategic”, so she was able to prepare each of the many materials in the back for each lesson, so we were more prepared for the multi-step science projects. We are also very strong in relationship building so we really added P.J as another member of our group and utilize him as such.
Education Major, 2019.

I have learned so much about global citizenship, social responsibility, and cultural intelligence after being able to take the trip to Belize. Talking about it in class was helpful but I didn’t realize how important it was in our daily lives until experiencing it myself firsthand outside the country. Education Major, 2019.

Conclusion

Tony Robbins (Tony, 2022) states there are six human needs that drive humans and that tie all of us together. There is a need for certainty and assurance that we can learn to avoid pain and gain pleasure. Conversely, there is also a need for uncertainty and variety along with change and new stimuli. Finally, all individuals have a need for significance, connection, growth, and contribution. David Livermore, (2015), points to the importance of understanding the values of cultures, the things that are both similar and dissimilar. The shared dialogue method proposed by Hubbs, 2020, and refined for our undergraduate international service-learning course provided a “Team Learning Foundation”. This foundation included striving to understand and improve our cultural intelligence, providing frameworks for understanding teaming, and understanding ourselves and others through *DISC*TM and Strength Finder 2.0TM assessments, models, and class activities for managing conflict, and striving to gain a shared ethic, value and servant approach to the time spent together and the projects completed.

The class offered students variety, immersion in another culture, and a chance for growth and connections that were felt far beyond the semester-long class and 10-day trip. While many university courses offer students in-depth insights into future professions, this class offered students the chance for meaningful connection with each other and with colleagues in another country. Saying goodbye was often the hardest portion of the trip illustrating that students had found connection, significance, and purpose.



Figure 4. Belizean Principal Carlos Watching the Students and Children Say Farewell

The *360° Team Learning Foundation* offered students the structure necessary to learn, grow, and thrive. This model is easily replicable and offers a strong base for the undergraduate student population who are not ready for complex dialogue on philosophical foundations, but who all need the chance to learn and grow. It can be replicated in many contexts and adjusted to circumstances. It is a basis for continued expansion and growth of the 360 Degree Education Model.

Acknowledgements

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Social Realism in the Works of Vincent Van Gogh

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Abstract: When we look at the development process of art, many different aspects of life have been reflected in works by artists. Some of these works reflected mythological images, while others reflected the socio-cultural influences experienced. Along with realism, artists have transferred the lives of people from different layers of societies to their works on the axis of reality. Artists, who reflect the struggles of people at the bottom of the society to survive in the face of life's difficulties, have turned to an unusually different subject context in the art of painting. This effect, initiated by realism, also affected the artists of the next period. Vincent Van Gogh holds an important place among these artists. This research includes the understanding of art of Vincent Van Gogh (1853-1890) and the socio-cultural context of the work named 'The Potato Eaters' (1885), which he produced on the axis of social realism. When the images used in the work are examined, it is seen that the artist reflects the daily lives of the individuals who constitute the lower class in the society he lives in, with a realistic perspective and artist aesthetics. It can be said that the images used in the work contain strong cultural contexts beyond reflecting the reality.

Keywords: Art, Vincent Van Gogh, the Potato Eaters, Social Realism, Realism

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Introduction

With the realism movement, artists have tried to convey the existing reality by focusing on the values of the society they live in. In this process, at the center of the compositions; people who work in work areas that require intensive labor such as workers, those who work in the fields, and make their living with physical strength are depicted. Although these works did not create the desired taste in the audience when they were first made, the values that Realism wanted to reveal were adopted over time. The realism movement has not prepared the ground for the production of works only in the context of art. At the same time, this movement has revealed the living standards, inequality and cultural differences between social strata. From this point of view, it can be said that the works reflecting social realism bear the traces of the socio-cultural structure of the society they

belong to. Just like in Vincent van Gogh's 'The Potato Eaters'. When looking at the whole work, it is difficult to come across indicators that do not exist in reality. Treating real life as a subject in his works, van Gogh shed light on the sociocultural structure of the period.

Vincent Van Gogh and His Art

Vincent Van Gogh is important in terms of painting. At the beginning of the points that make the artist important is that the works he produced during his lifetime contain avant-garde codes. When we look at the sources, the artist was affected by the fact that he went through economically troubled processes, suffered from health problems, and that the works he produced did not find a response in the society. Vincent van Gogh gave an impressive performance in the short time he realized his artworks. The artist has made paintings so beautiful that they will affect the feelings of future generations. Despite producing works with such a high level of influence, it is known that Vincent could not sell works during his lifetime. This is ironic in terms of Vincent's effective art performance. The mental hospital, where he spent the last two years of his life, is the place where he produced the most works. *"They whisper into posterity's ear the tragic secret of a genius who all his troubled life was for ever pursuing the unattainable-spiritual peace-at last to find it only through selfdestruction"* (Bett, et al., 1954, p. 7-8). In the middle of the 19th century, the effects of the Realism movement are seen intensely in France. Artists who produce works in the context of this movement reflect the lives of people at the bottom of the society to their works in the context of 'social realism'. Vincent closely followed the works of art produced with a social realist perspective in France. Some of the works of the artist are similar to those of Jean-François Millet. This similarity is seen in the reflection of Vincent's village life as a subject in his works. Vincent van Gogh observed village life while he lived in Nuenen, the Netherlands. During this period, the artist made the work 'The Potato Eaters'.



Image 1: Vincent van Gogh, The Potato Eaters, Nuenen, April-May 1885, Van Gogh Museum, Amsterdam

(Url: <https://www.vangoghmuseum.nl/en/collection/s0005V1962> Date of Access: 18.11.2022)

“The glorification of the worker, which became an artistic theme in naturalism, was not enough for van Gogh. According to him, the worker also had to be his own audience. (...) Only once were Van Gogh’s peasants both subject and spectator. With his brother’s help, he printed twenty lithographs of ‘The Potato Eaters’ that the surrounding people could afford to buy. This painting represents a summary of his early period, from May 1885. An atmosphere of camaraderie and poverty shines through the frugal dinner shared by the five skinny and work-weary figures” (Walther, 2000, p. 11-12).

Vincent van Gogh (1853-1890) produced his works in the last ten years of his life. The artist, who created a unique art style in this ten-year period, had the ability to produce works continuously during his maturity period. Most of the information about Van Gogh’s art and personality comes from the letters he wrote to his brother Theo. The expressions in these letters are like an analysis of Vincent’s own psychology and the socio-cultural situations experienced by the people around him (Brower, 2000, p. 179-180). The artist’s work named ‘The Potato Eaters’ should be evaluated in this context. Where Vincent lives, he is influenced by the struggles of the people around him. This effect is reflected in the artist’s understanding of art.

In this work, where figure drawings are at the forefront, the images of family members who are exhausted from working are depicted at the dinner table. The colors and facial expressions used in ‘The Potato Eaters’ evoke both negative and positive emotions in the viewer. This work, which is a reflection of the socio-cultural structure, can be evaluated in the context of social realism. Despite the negativities, the family uniting feature of the dining table is at the forefront. The lamp in the middle of the composition helps the audience focus on the figures. ‘The Potato Eaters’ has a special meaning for van Gogh. In the letters he wrote to his brother Theo, he evaluated both the formality and the semantic structure of this work. In the letters he wrote to his brother Theo, he evaluated the formal and semantic structure of this work. It can be said that making these evaluations is due to the fact that it contains social realistic codes that are far from the expectations of the art environment. The following points stated by the artist about ‘Potato Eaters’ in his letters are important for the perception of the work:

“Have tried to emphasize that those people, eating their potatoes in the lamplight, have dug the earth with those very hands they put in the dish, and so it speaks of manual labor, and how they have honestly earned their food.

I have wanted to give the impression of a way of life quite different from that of us civilized people. Therefore I am not at all anxious for every- one to like it or to admire it at once.

In the same way it would be wrong, I think, to give a peasant picture a certain conventional smoothness. If a peasant picture smells of bacon, smoke, potato steam - all right, that’s not unhealthy; if a stable smells of dung - all right, that belongs to a stable; if the field has an odor of ripe corn or

potatoes or of guano or manure - that's healthy, especially for city people" (Letter 404) (Raskin, 1990, 391-392).

Considering in the context of these statements of Vincent van Gogh, it is understood that the artist is not indifferent to the social variables in which he lives. It can be said that every sign used in the work called 'The Potato Eaters' evokes a connotation for the culture to which it belongs. The reading of the facial expressions of all adult family members lined up around the table by the audience, and the sincerity and contentment that broke the silence throughout the work carried the 'Potato Eaters' to a different dimension. As Vincent stated in his letters, besides the happiness in return for the effort given while they planted the soil and then harvested the potatoes they harvested, their being contented stance shows that happiness can be achieved not with wealth but with small gains that can be achieved by labor. The foundations of social realism are the reflection of the reality of the socio-cultural situations in which the society lives. This reality is reflected in the works of art with the Realism movement in art.

With the Romanticism movement that emerged at the beginning of the 19th century, artists brought freedom to the artist with their romantic-themed works, in which they conveyed intense emotions. This freedom conveyed intense emotions in the compositions that the artists built away from social realism. In Realism, which is a reaction to the extreme emotional transfer of the Romanticism movement, the transfer of emotion is reflected in the works produced in the context of reality.

Conclusion

It is known that Vincent van Gogh produced many works in his short artistic life. The fact that these works have different forms and content from each other offers important clues about the artist's understanding of art. Vincent produced works that included impressionist, expressionist and realist features. The artist's work called 'The Potato Eaters' is a work that needs to be examined from a different perspective. The most important message Van Gogh wanted to convey with this work was not ideal human anatomy or aesthetic values. Intense social realism, which started with realism, also affected the artist. A life spent in economic troubles would of course come to life in the artist's brush. He observed human activity in the rural area where he lived for a while.

This work of the artist can be seen as the reflection of the actual social life on the work with the aesthetic of the artist. However, when the work is examined, it is revealed that the artist does not care about aesthetics. Both the colors used and the characteristic approach in the anatomical structures of the figures convey intense emotion in the interaction of the viewer with the work. 'The Potato Eaters' was not made for the sake of being liked by the audience. One of the important points that makes this work different is that the signs in the work reveal a real cross-section of life. Nature is a source of inspiration for the artist. Nature does not just point to the potential of the landscape. At the same time, the life cycle of people is a part of nature.

Deformed hands and facial features in 'The Potato Eaters' refer to the effort to survive in harsh condition. Although the colors used in the work emphasize pessimism, the light filtering from the lamp dissipates this pessimistic atmosphere. The points illuminated by the light make visible the social realism desired to be given with the work.

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Image 1: Vincent van Gogh, The Potato Eaters, Nuenen, April-May 1885, Van Gogh Museum, Amsterdam
(Url: <https://www.vangoghmuseum.nl/en/collection/s0005V1962> Date of Access: 18.11.2022)

China-India Development Study in the Post-Epidemic Era

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Abstract: Since entering the twenty-first century, the economies of China and India have grown tremendously, but trade frictions and geopolitical conflicts between the two countries have become unnoticeable. By summarizing and combing the literature, this paper compares the changes in the research views of Chinese and Indian scholars on the economy and policy making of the two countries before and after the outbreak of the Covid-19 epidemic in 2019. The common advantages of China and India in terms of economic development are mainly the economic development driven by the demographic dividend including cheap labor and the large amount of FDI attracted, followed by the problems faced by both countries, including the dilemma of industrial chain transfer and industrial upgrading in China, and the lack of comprehensive FDI development, backward openness, and policy restrictions in India. On this basis, both countries need to make reforms in areas such as industrial chain upgrading, e-commerce, etc. There is also a need to seek balance and stability in geopolitical conflicts, such as the competition between the Belt and Road strategy and QUAD. Finally, it is concluded that there is no major change in scholars' views on the macro trends of the two countries' prospects. However, two major factors, geopolitical and policy shifts, have led Chinese and Indian scholars to believe that the development directions and strategies of China and India in the post-epidemic era have new perceptions and changes compared to those before the epidemic.

Keywords: Economic, India, China, Politics

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Introduction

Asian economies have grown tremendously in the 21st century, especially China and India, which have experienced phenomenal economic growth in the last decade. According to the World Bank, China had an average GDP growth rate of 8.0 and India had an average GDP growth rate of 6.4 in the twelve years from 2008 to 2019. Along with the “rise of the East”, the comparative development of China and India has gradually attracted the attention of scholars. Existing studies show that both governments have very productive practices and developments in introducing FDI (Foreign Direct Investment) and e-commerce. And the challenges and opportunities for the future economic development of both countries in terms of industry chain transfer and upgrading. However, the sudden outbreak of Covid-19 has significantly altered the global socioeconomic order.

While it remains to be seen how post-pandemic developments in both countries will look like, this article examines an important side of the new development story. That is: How have the ways in which experts and intellectuals in China and India envision about their future development changed since covid-19?

The development of both China and India is closely linked to FDI, but China has a larger market and better infrastructure and is spread across the country and many industries, creating more jobs and a more robust development model. India, on the other hand, has more advantages in terms of a transparent work system and regulatory environment, but FDI is concentrated in six major cities and in IT and services, with limited positive effects on economic and technological development. Not only that, China is also more open in the development of e-commerce, having established a free trade zone early and given many policies to support it. In contrast, India is more conservative, with the government prohibiting foreign capital investment in the retail industry, which is monopolized by domestic companies and developing slowly.

Literature Review

China and India share many similarities in their economic development models. As the world's first and second most populous countries, both two countries have achieved their demographic dividends through the introduction of foreign investment, labor-intensive enterprises and low-cost processing downstream in the industrial chain, especially extremely low labor costs and untapped land, which are among the factors driving the rapid development of both countries.

Although the development of China and India is closely related to foreign direct investment, there are significant differences in the investment environments of the two countries. China has a larger market than India, easy access to export markets, government incentives, developed infrastructure, cost efficiency and macroeconomic environment. On the other hand, India has a talent management system, rule of law, transparent work system, cultural affinity, and regulatory environment. (Agrawal and Khan, 2011; Sinha, et al, 2007; Zheng, 2009; Parashar, 2015; Huang and Tang, 2011).

There are also significant differences in the economic structure of development between India and China in terms of attracting foreign investment. China's foreign investment is distributed across the country, creating more jobs, while India is concentrated in six major cities, has relatively homogenous industries, particularly concentrated in IT and services, has failed to leverage FDI in a wide range of areas to create jobs and absorb technology. China opened its market earlier and has some proven experience. Some Indian scholars argue that India is late in opening up and should learn from the experience of China's special economic zones. Meanwhile, India's foreign-invested industries are mainly concentrated in IT and services, which are exploitative subsidiaries. India needs to attract more subsidiaries with innovative technologies, as China has done. (Prime, 2012; Pai and Bandari, 2021; Claro, 2009).

In e-commerce, China was early to open up a free e-commerce marketplace dominated by domestic firms such as Alibaba, announced as early as 2013 that foreign investors would be allowed to set up wholly foreign-owned e-commerce companies in the Shanghai Free Trade Zone, and removed the 50% cap on foreign ownership in e-commerce in 2015. India, on the other hand, is relatively more conservative and cautious, as it has not yet liberalized e-commerce and legally prohibits foreign investment in online retail, resulting in a slow and lagging market for e-commerce in India dominated entirely by domestic monopoly sellers. (Horowitz and Phelan, 2015; Gangeshwer, 2013; Das and Ara, 2015).

Method

By analyzing the research of Chinese and Indian scholars on the economy and policy making of the two countries before the outbreak of the Covid-19 epidemic in 2019, this paper summarizes the common advantages of China and India in terms of economic development, mainly the economic development driven by the demographic dividend including cheap labor and the large amount of FDI attracted, as well as the problems faced by both countries, including the shift of the industrial chain and industrial upgrading in China's dilemma, and India's FDI development is not comprehensive enough, backward in openness, and policy restrictions. Then, by summarizing and summarizing the literature, we focus on the academic studies related to the economic development of the two countries and the problems faced by Chinese and Indian scholars after the outbreak of Covid-19 in 2019, and summarize and discuss the views of scholars on the prospects of economic development of the two countries in the post-epidemic era compared with past analyses, and there is no major change regarding the macro trends and prospects. However, with the geopolitical and policy shifts in both countries, Chinese and Indian scholars have new assessments and perspectives on the development directions and strategies of China and India in the post-epidemic era.

The next section will begin with a comparison of the economic conditions and development directions of India and China in the post-epidemic era; then the industrial shift and geopolitics facing China and the opportunities it will bring to India; then the lessons India has learned from Chinese practice; and the geopolitical conflict between India and China and its implications.

Empirical Section

Comparison of the Development Status and Development Direction of China and India in the Post-Epidemic Era

Indian scholars believe that the Indian government should develop Geographical Indications and encourage MSMEs to enter the e-commerce sector, while Chinese scholars believe that the Chinese government should avoid political decoupling and rely on its economic and volume advantages to participate in international standard setting.

Some Indian scholars have raised concerns that the ongoing pandemic has made it more difficult for foreign companies and multinational corporations to maintain a stable workforce, and this pressure has put a damper on India's growth. Deepak Mishra, noted that the global pandemic of Covid-19 has exacerbated the situation. Multinational corporations, large corporations and companies using cutting-edge and high-end technology in India are more inclined to hire informal workers through the contractor level, which is a major obstacle to the development of high-quality FDI in India to promote domestic industrialization. There are also some Indian scholars, for example, Saeeduddin Faridi who are optimistic about economic development under the epidemic and believe that the Geographical Indications (GI) industry and the digital economy will be a major pillar of growth in this scenario. The Geographical Indications (GI) business can help India improve this situation, creating challenges such as marketing linkages, R&D, product innovation and competitiveness in domestic and international markets. Blaise Fernandes agrees that the GI industry has the potential to be a source of economic and soft power that can help solve the problem of talent Low wages, low female labor force participation and urban migration. Fernandes also believes that the Indian economy under the impact of the epidemic can still rely on e-commerce to achieve some results, while the flood of e-commerce investments is India's last chance to reinvigorate the MSME and agricultural sectors, and reforms are imperative.

And focusing on the comparative study of the development directions of China and India, many Chinese scholars believe that the process of globalization and industrialization is an important manifestation of the difference between the two development levels. The value of cooperation between the two countries in the future is far greater than “decoupling”. Tianjin University of Commerce and Economics corresponding author Zhang Tongjin believes that China has adopted a more export-oriented development strategy, its industrialization or urbanization process is faster than India's, and its globalization is deeper. Developing countries must give priority to creating jobs in secondary and tertiary industries through industrialization and globalization to absorb surplus agricultural labor and help reduce poverty in rural areas. Guo Xia, an assistant researcher at the Information Department of the China Center for International Economic Exchanges, and Park Guangji, a researcher at the Institute of Asia-Pacific and Global Strategy of the Chinese Academy of Social Sciences, also believe that in a globalized environment, even if India has special environment and regulations, it is not enough for the development of digital service trade. There are pros and cons. China needs to strengthen cooperation with India and try to avoid political decoupling. At the same time, it also needs to rely on its own market and economic advantages to participate in and influence the formulation of international trade rules.

China's Geopolitical Crisis, Domestic Policy Changes and Industry Chain Shift and Transformation will Present Opportunities for India in the Post-Epidemic Era

Despite some of China's leading economic development, some Indian scholars see the current geopolitical conflicts facing China, as well as China's domestic policy making and industrial chain transformation, as opportunities for India to attract more FDI, especially foreign investment in manufacturing, and as a way to accelerate the completion of industrialization.

Some Indian academics believe that China's predicament of geopolitical economic and trade confrontation in the post-epidemic era will present opportunities for India to attract foreign investment. Research fellow at the Indian Council of World Affairs, Teshu Singh, pointed out that the deterioration of relations between China and Australia has led the Chinese government to terminate the economic dialogue and cancel two deals under Australia's Belt and Road Initiative (BRI). China was also banned from buying certain commodities from Australia, such as coal, barley, copper ore and refined sugar, timber, wine and lobster. As a fellow QUAD partner with Australia, this would be a good opportunity for India to gain a share of trade and cooperation that would otherwise be available to China. Some scholars emphasize that India needs to develop technology startups, and China's policy shift will also bring opportunities for India. When some policy making in China affects the confidence of international capital, it may lead to some FDI outflow, while some Indian startups or unicorns may have more opportunities to receive foreign direct investment. Amit Bhandari points out an example that China's scrutiny of its tech giants Alibaba, Tencent and Didi has reignited longstanding questions about the true ownership and control of Chinese companies and whether China's private sector is truly privatized. The crackdown will further raise questions about actual control and, in the long run, could alienate the Western investors who fund and support the companies. Their progress is likely to slow as their valuations and future access to capital decline. Tighter regulation by the Chinese government could also curb the ability of companies to innovate. While some experts believe India will be the beneficiary of this move by China, it also hints at some concerns about today's domestic tech startups in India. There are many emerging startups in India that show good promise, but many are at an uninitiated stage. These companies have been dependent on foreign capital and have yet to show sustained profitability. Some academics believe that what India needs to do is address significant regulatory hurdles, from land acquisitions to the recently reversed retrospective tax. If these barriers to FDI are eased, the IPO process for Indian tech unicorns could accelerate significantly.

Chinese scholars' analysis of China's post-epidemic era generally agrees that the shift of China's low-end industrial chain to Southeast Asia and India is inevitable, and that this shift has already begun long before the epidemic due to rising employment costs and changes in government policies, and that the aging population and the reduction of new population will also make China's demographic dividend non-existent. What China really needs to pay attention to is optimizing the quality of the industrial chain and gradually transitioning from the lower end of the production chain to the middle and upper end of the chain to achieve high quality development. Regarding the possible development direction of China's industrial chain in the post-epidemic era, Gao Shanwen, chief economist of Essence Securities, believes that decentralization, near-shore and localization of the supply chain are considered as possible trends. Rising labor costs in China are associated with declining competitiveness in a number of areas. For example, in labor-intensive segments, China's comparative advantage began to decline significantly around 2013, with industrial shifts in industries such as apparel, shoes and boots, bags and furniture taking place well before the pandemic. This will put greater pressure and more urgent requirements on China's economic growth and structural transformation. Some Chinese scholars are also optimistic about the shift of industrial chains, believing that China can retain some low-end industrial chains due to its huge market potential and the fact that it still retains some advantages over Southeast Asia in some low-end industries. Niu Bokun, chief economist of Huachuang Securities, said that the supply chain system of

multinational companies will need more autonomous controllability, real-time production model and global decentralization attitude. Production is becoming more conservative. While many labor-intensive industries have moved and will continue to move to Southeast Asian countries at low cost, even low-end industries will not move entirely based on the potential of China's future as the world's largest consumer market. For example, Vietnam's advantage in some downstream traded products is being slightly replaced by mainland China. Vietnam's exports are also more dependent on the industrial chain of mainland China. In analyzing the development trend of India, Some Chinese scholars, believe that based on the general trend of industrial chain transfer from high-cost countries to low-cost countries, making good use of FDI will be the key to promote India's industrialization and industrial allocation, and the positive feedback effect brought by FDI can help India expand its industrialization from a single industry to the whole industrial chain and achieve leapfrog development. Zhang Zhiwei, chief economist of Shanghai Baoyin Private Equity, then believes that along with the transfer of production, foreign investment (FDI) has poured into India, promoting the growth of exports, increasing employment and improving infrastructure.

India Learns from China's Experience in Development and Reform

Beyond the opportunities presented by the challenges encountered by China, the Chinese development experience has also received the attention of Indian scholars. Many Indian scholars and officials have cited the importance of learning from China's successful experiences. Some Indian scholars say that learning from China's experience in developing e-commerce and supporting small and micro enterprises in the post-epidemic era is a model that is well suited to India's drive for domestic economic development and can help drive the "Make in India 2.0" strategy. Blaise Fernandes argues that China's e-commerce-driven growth over the past decade has been inclusive. This means that China has succeeded in empowering MSMEs to compete with large enterprises without geographical restrictions. MSMEs can leverage affordable digital platform services to build brand awareness, acquire and manage customers, and inspire innovation. And, some Indian scholars have also pointed out the limitations of the existing framework of FDI in India, which suffers from over-concentration of both industries and regions covered and does not really improve the overall industrial structure within India. Some Indian scholars have suggested that the reform experience of China can be studied and borrowed to help promote the localization of FDI to drive the development of local enterprises and industries. Santosh Pai, Treasurer and Honorary Fellow of ICS Delhi, and Shubhi Bhandari, a legal practitioner registered in New Delhi, India. They point out that foreign investment in India is also highly concentrated in a few regions, with a relative concentration of industries that is not as effective in creating jobs and absorbing technology. India needs to encourage joint ventures in India to absorb technology and conduct localized R&D. It can learn from China's successful experience of establishing special economic zones. It can also learn from China's success in developing SMEs to promote "Make in India 2.0". The Indian government has also indicated that the digital economy, which is an extremely important part of the Indian economy, also has this practical experience in China that can be referred to. Like India, China is also vigorously developing its digital economy, which is a good object of reference for India's development.

Harsh Vardhan Shringla, India's foreign minister, in "Harnessing the Chinese Economy," published on October 28, 2021, said, "China is the only major economy to show positive growth in 2020 in the shadow of the ongoing COVID-19 pandemic. As the largest contributor to world trade and our largest trading partner, we must better understand the Chinese economy." And while India is making a big push to develop its digital economy, China is a similar example of a country with a similarly growing digital economy. China is also experimenting with concepts such as digital currency. Thus, understanding "Digital China" can provide valuable insights for Indian policymakers and industry.

Geopolitical Conflicts and Games between India and China in the Post-Epidemic Era on Development

It is worth noting that economic factors are not the whole story of the development direction of China and India, and geopolitics has a pivotal role in the economic policies of both countries. The Indian government seeks to use the "Indo-Pacific" concept to break the geopolitical threat of China and strengthen quadrilateral relations with Pacific countries, also known as QUAD, to reach economic benefits. India and China are in a relationship of cooperation and confrontation, but the balance may be tipping as the geopolitical conflict between the two countries worsens, with the Indo-Pacific strategy marking a further expansion of efforts to eliminate China's influence. Some Indian experts see the Indo-Pacific Economic Framework (IPEF) as a direct counter to China's Belt and Road Initiative (BRI). The Indian government seeks to use the "Indo-Pacific" concept to break the geopolitical threat of China and strengthen quadrilateral relations with Pacific countries, also known as QUAD, to reach economic benefits. India and China are in a relationship of cooperation and confrontation, but the balance may be tipping as the geopolitical conflict between the two countries worsens, with the Indo-Pacific strategy marking a further expansion of efforts to remove China's influence. Some Indian experts see the Indo-Pacific Economic Framework (IPEF) being established by QUAD as a direct counter to China's Belt and Road Initiative (BRI). Pragma Pandey mentioned that many Pacific Island Countries (PICs) such as Fiji, Papua New Guinea (PNG), Vanuatu, Niue, and Solomon Islands have signed MOUs with China on the Belt and Road Initiative. In contrast and in response, the United States, a member of QUAD, plans to reopen its embassy in Solomon Islands and is also working towards negotiations for renewing Compacts of Free Association with the Marshall Islands, Federated States of Micronesia (FSM), and Palau. In addition to diplomatically oriented economic issues such as foreign investment in infrastructure and loans, QUAD also wants to strengthen internal cooperation among the four countries as a way to boost the economy and limit China. This cooperation is reflected in several areas that are relevant to China. According to Rahul Nath Choudhury, QUAD wants to establish five major economic advantages, which are the establishment of a semiconductor supply chain; emerging technology services; supply of rare earth minerals; enhanced trade; and infrastructure development. It is worth noting that all QUAD members have banned Chinese companies from testing their 5G technology, citing security reasons or fears of Chinese companies interfering in their domestic issues.

By promoting the concept of Northeast Asia, China hopes to promote the upgrading and transformation of its domestic industrial chain, while deepening its geopolitical partnerships and countering the Indo-Pacific strategy proposed by the United States and vigorously promoted by India. Although the Indo-Pacific strategy is

inextricably linked to Japan, China still needs and can seek deeper cooperation in the Asia-Pacific region. Foreign direct investment from Japan and South Korea is also an important form of Chinese manufacturing participation in global value chains. China can counter this "crowding out" strategy of eliminating its own influence by relying on its large market and influence, as well as the strong trade ties it has developed with neighboring countries. According to Li Tianguo, Japanese and South Korean investments in China are mainly in manufacturing, and China is an important target for direct investment by Japanese and South Korean companies, with Japan being the largest investor among the three countries. The close ties between the three countries in Northeast Asia, and East Asia in particular, make the elimination of China's influence in the Indo-Pacific strategy not completely contradictory to the advancement of China's value chain. Regarding China's foreign policy, Li Tianguo suggested that China could further lower tariffs and institutional barriers, foster import trade promotion demonstration zones, and expand imports of quality products and services from Northeast Asian countries. China's Belt and Road Initiative (BRI), on the other hand, is a major strategy to strengthen its own foreign political and economic influence, and a kind of pushback to the Indo-Pacific Economic Framework (IPEF). Many Chinese scholars see India's initiative as a targeted confrontation with the Belt and Road Initiative, an attempt to prevent China's dominance from increasing regionally and even globally. This confrontation was emerging before the epidemic and is escalating as QUAD ties become closer and more institutionalized. According to Lou Chunhao, deputy director of the Institute of South Asian Studies at the China Institute of Modern International Relations, the Indian government has been making frequent moves in the economic and trade sector since the epidemic, taking many initiatives such as suspending customs clearance of Chinese goods, banning hundreds of Chinese mobile apps, speeding up the hearing of anti-dumping investigations against China, and banning Chinese companies from bidding on Indian infrastructure projects. India has been echoing the US rhetoric of decoupling the industrial chain with China and actively seeking industrial chain cooperation with the United States.

Conclusion

From this, we can conclude that in the post-epidemic era, China and India remain at different stages of development and face different opportunities and challenges. China has a more open investment policy and infrastructure development, but also faces geopolitical conflicts, the trend of industrial chain transfer and domestic policies. India, on the other hand, is more conservative in its policies, but relies on a transparent regulatory environment and learning from China's reform experience, and more importantly, may be able to promote India's economic development through the Chinese political crisis. It is worth noting that between the two economies, geopolitics has influenced policy making, which is a factor that cannot be ignored. Of course, this paper has its limitations; the literature is referenced and analyzed from sources as long as they come from the English and Chinese literature and cannot represent the views of the Indian public. The importance of Sino-Indian relations in the Asia-Pacific region has become more critical in the post-epidemic era, where the old order is gradually disintegrating. In this, the stable development of the Chinese and Indian economies will be an important cornerstone of economic stability and political peace in the Asia-Pacific region.

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