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Evidence-Based Acquisition (EBA) in UM Library Collection Development

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Abstract: Academic libraries play an important role in supporting the university's goal and vision to meet the needs of teaching, learning, and research activities by offering current, high-quality, and relevant information resources. To ensure that the collection created satisfies knowledge needs, the librarian must work in conjunction with faculty and other stakeholders while choosing books for collection development. Therefore, the academic library's responsibility is to acquire, manage, gather, and select relevant and high-quality information sources to satisfy the demands of library users and cover the various fields of knowledge Along with the development of digital technology, electronic information sources are becoming an important component in building library collections. Therefore, academic libraries are now developing their collections using the Evidence-Based Acquisition (EBA) method to guarantee that library collections satisfy user needs and increase the efficiency of material purchases. This modern approach allows academic libraries to build relevant collections, prioritizes user needs, cost-efficient, and makes the acquisition process more efficient and better aligned with academic needs. The main elements of EBA are based on on-demand access, whereby library users can access resources before the library makes a purchase decision. Besides, the library will only purchase materials that are often accessed or utilized. This article discusses the impact of the Evidence-Based Acquisition (EBA) method in UM Library collection development practices.

Keywords: Evidence-Based Acquisition, electronic information sources, academic libraries

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Introduction

The University of Malaya Library continues to serve as one of the leading universities in Malaysia, supporting teaching, learning, and research through a comprehensive and diverse collection of resources. The collection reflects the library's ongoing commitment to balance traditional print materials with rapidly expanding digital and electronic resources, ensuring accessibility and inclusivity for the university community. The library's print collection remains extensive, comprising 898,769 titles. These include books, journals, theses, and reference materials that serve a wide range of academic disciplines. Despite the increasing shift toward digital resources, the print collection continues to play a vital role in supporting users who prefer physical materials for in-depth study and research. In addition, the library houses 489,238 non-book materials**,** such as audiovisual items, maps, microforms, and other multimedia resources. These materials provide alternative learning tools and complement

traditional academic references, especially in areas such as the arts, education, and media studies. The digital transformation of the library is further evident in its 290,216 electronic and digital sources**,** which encompass e-books, e-journals, and other digital learning objects. These resources are accessible remotely, offering flexibility to students, researchers, and academic staff who require up-to-date information from anywhere and at any time. To further support advanced research and data-driven learning, the library subscribes to 84 online databases**.** These databases provide access to a wide range of scholarly publications, citation indexes, and subject-specific repositories, strengthening the university's capacity for high-impact research and innovation.

As the library's strategy evolved, the number of eBooks grew significantly, especially with the adoption of subscription-based models. By 2025, the UM library boasted 78,637 eBook titles. This shift is not only enhanced the library's collection but also allowed for more efficiency budget management, as digital resources often prove to be more cost-effective than maintaining large collections of printed books.

Evidence-Based Acquisition (EBA) in libraries is a method of purchasing electronic books based on actual usage data rather than predictions or pre-selected titles. As explained by various publishers and library guides, this model allows an institution to access a large collection of e-books for a predetermined period (e.g., 12 months) with the condition of a deposit or initial commitment. Gather usage data, such as downloads, readings, prints, and "turnaway" or denied requests during the access period. At the end of the evaluation, choose titles with high usage or proven relevance for perpetual access using funds from the initial deposit.

In short, EBA can be viewed as an "access first, select later" model based on user data. According to Strothmann (2020), Evidence-based Acquisition (EBA) is a selection approach that reverses the traditional steps, use comes before selection. The combination of bibliometrics and evidence-based acquisition models offers a strategic way for libraries to make decisions driven by data, helping to improve resource use and meet the changing needs of academics (Zhe & Qiu, 2024).

In recent years, the University of Malaya Library has witnessed a notable surge in the use of digital resources, particularly e-books and research databases. The library's annual reports consistently show an upward trend in article downloads, e-book usage, and access to online journals. This growth can be attributed to several key factors, foremost among them the shift in teaching and learning methods toward digital-based education. Platforms such as SPeCTRUM and other e-learning systems have positioned digital materials as essential references for coursework and academic activities. The availability of e-books with 24-hour access from any location has further enhanced convenience for students and academic staff, significantly reducing reliance on physical collections.

At the same time, global academic publishing has undergone a marked shift toward digital dissemination. Well-known publishers such as Elsevier, Emerald, Springer, and Cambridge are increasingly prioritizing electronic formats, reflecting the worldwide transformation in scholarly communication and information access.

The information needs of academics at the University of Malaya have become increasingly diverse and complex. Postgraduate researchers and academic staff now require access to multidisciplinary materials that bridge the gaps between science and social sciences, technology and the humanities. Meanwhile, undergraduate students seek reference materials that are easy to comprehend, closely aligned with their coursework, and accessible anytime without technical constraints. To support high-impact research and scholarly publications in line with UM's reputation as a leading research university, access to international content needs to be prioritized.

Differences Between Traditional Methods, DDA and EBA

The following provides a comparison between the three main models of modern and traditional library material acquisition, traditional methods such as direct purchase or subscription based on lists, Evidence-Based Acquisition (EBA) and Demand-Driven Acquisition (DDA).

Traditional Method

Before the implementation of EBA, UM Library had used standard acquisition methods, which involved purchasing print and electronic books based on requests from faculty, librarians' assessments, and reading list. Purchases are made in advance and then made available to users. These practices also involved ordering titles that were selected through a system known as the orders form from a collection of academic staff and librarians recommendations. After the approval, the vendors provided books on order in accordance with the book list and budget allocations. Other than that, another method is to use subscription packages where the library subscribes to publisher packages that collectively purchase a large number of e-books, regardless of whether every title was relevant to the institution's users. The advantage of this approach is that it effectively allows the library full control over collection selection. However, the disadvantage is that it is less flexible and there is a higher risk of acquiring unused or underused materials, since only the applicant who suggested the title is likely to use it.

Demand-Driven Acquisition (DDA)

Demand Driven Acquisition is a model in which e-book materials are available in a catalog or collection for users, and purchases occur when users demonstrate usage or trigger a pre-defined 'trigger' (e.g., number of views, downloads, page reads) or requesting a specific title. In DDA, users directly or through usage profiles determine the library's collection where the library only pays when the ebooks are being used (pay-per-use) or when agreed upon conditions are met. Zhang et al. (2015) examine how academic libraries can evaluate different models of Demand-Driven Acquisition (DDA) for e-books using scenario analysis.

The major advantage of the DDA model for academic libraries is its capacity to provide immediate access to a large collection of e-books, enabling the library to purchase only those e-books that have utility to patrons.

Besides that, the collection is more responsive to actual user needs, costs can be better controlled because they are only purchased when used. We might not see the same stability long-run for the downside of working with this model, because not all necessary titles are used during the monitoring period, and you also need a good technical means of tracking the usage triggers. In summary, In short, Monroe-Gulick et al., (2024) defines DDA as a collection acquisition approach in which a library provides a list of titles or monograph collections, which may be both print and electronic, for users to choose from, and the library does not acquire the titles on an inbound demand basis until users have sufficient usage or demand (e.g., downloads, page reads or specific requests). "User usage thus directly contributes to the library's book selection process."

Evidence-Based Acquisition (EBA)

As explained above, EBA is a model that involves libraries paying a deposit or taking access to a large collection for a certain duration, collect usage data, and then selecting titles for permanent purchase based on the collected data.This model provides a balance between early broad access and later selective purchasing, which can be considered a hybrid approach between traditional purchasing and demand-driven models. Strothmann (2020) states that "First, patrons have the opportunity to use e-books from a specified collection. After enough time has elapsed to allow evidence to accumulate, librarians can use it to inform their selections, buying books whose value to patrons has been demonstrated by usage data."

In terms of advantages, this model can reduce the risk of purchasing underused materials, give libraries the flexibility to choose based on usage data; provide users with a large trial opportunity, optimize the return on the library's investment. EBA also has several disadvantages. These include the need for an initial access commitment (deposit), may need more analysis data, and may be more expensive than traditional models.

Table 1: Brief Comparison on Traditional Methods, DDA and EBA

Model	**Main Approach**	**Who chooses the title**	**Purchase risk**	**Special note**
Traditional	Buy first, prepare later	A library based on predictions	High	Simpler workflow, less usage data
DDA (Demand Driven Acquisition)	Prepare a catalog, buy when needed	User / automatic trigger	Low-Medium	Responsive to user needs, flexible costs
EBA (Evidence Based Acquisition)	Access collection →collect data→buy permenantly	A library based on data	Low	Combines broad access + evidence-based selection

Implementation Process of Evidence-Based Acquisition (EBA)

The implementation process of Evidence-Based Acquisition (EBA) at the University of Malaya (UM) was an intended program initiative to enhance the management of digital collection management and to make investment more based on actual usage data. This evidence-based model, which has been widely adopted by leading higher education worldwide, is now being adapted by UM as part of a new approach to developing a more responsive, evidence-based, and sustainable electronic collection. The EBA implementation process at UM follows three main phases:

1. The trial or full-access phase
2. The data analysis and evaluation phase
3. The final selection phase

The Trial or Full-access Phase

This process is carried out in close collaboration with international publishers, including Elsevier (through the *ScienceDirect* platform) and Emerald Publishing (through the *Enhanced EBA/Select* program). The first phase in the implementation of Evidence-Based Acquisition (EBA) involves providing full access to a collection of e-books occur for a fixed time, typically up to 12 months. In this case, the University of Malaya Library work closely with publishers and enables thousands of e-book titles covering a wide range of academic disciplines.
For example, UM was introduced to over 2,200 titles, including 1,900 e-books and 300 e-textbooks, over the course of the EBA program with Elsevier ScienceDirect for the 2024 programme covering a variety of disciplines, including Biomedical Science and Medicine, Engineering, Mathematics and Computing, Pharmacology and Pharmaceutical Science, Psychology, and Social Science.

With the Emerald Enhanced EBA/Select program, the library receives more than 4,180 international titles provided by Emerald, from monographs, book series, and handbooks in multiple subject areas such as Accounting, Finance & Economics, Business, Management & Strategy, Education, Engineering, HR, Learning & Organization Studies, Library Studies, Marketing & PR, Public Policy & Environmental Management, Sociology, Tourism & Hospitality Management, and Transport.

The main purpose of the trial phase will be to establish real users among students, researchers, and academic staff with free access to explore and utilize these materials. There are no restrictions on usage, and data availability is obtained via an automatic access control system from the publisher reports. During this period, the library will also run promotional activities to increase awareness and usage on the campus community and training workshops to help students and researchers get familiar with the digital platform and monitor monthly access statistics to identify subjects with high online use. This phase allows the library to understand the user's academic requirements before purchase.

The Data Analysis and Evaluation Phase

The second phase of the EBA implementation concentrates on a detailed analysis of usage data once access is opened after completion of the full-access period. Information collected from publisher systems such as ScienceDirect Usage Reports and Emerald COUNTER Reports is analysed to determine several key indicators, including the total number of readings, downloads, and turnaways (unsuccessful access attempts) for each title; subject areas with the highest usage; and usage patterns by month, user type, and faculty.

For example, the *ScienceDirect Book Analysis Report* for the University of Malaya recorded more than a 100% increase in usage compared to the previous year with the highest engagement observed in the fields of Engineering, Materials Science, and Biomedical Sciences.

On the other hand, usage trend of Emerald eBooks from 2020 to 2025 shows clear changes in user access and demand. From 2020 to 2023, turnaways were consistently high (3,651–5,591) while downloads remained low, indicating strong user interest but limited access to titles.In 2024, downloads increased to 2,179 and turnaways decreased, showing improved accessibility. The most significant improvement occurred in 2025, with downloads rising sharply to 5,733 and turnaways drop to only 108.

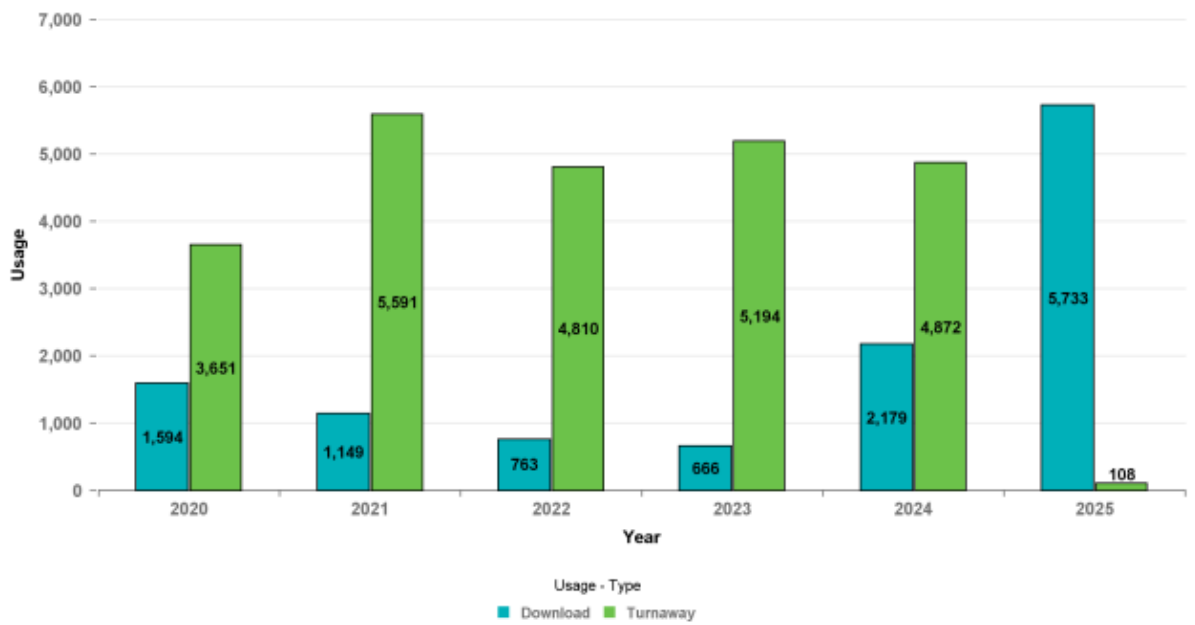

Figure 1. Emerald eBooks Usage by Year (2020–2025)

In this analytic phase, the research utilizes standardized measures for accurate assessment. Among these are including Total Item Requests, which represent the total number of full-text e-book or book chapter downloads; Unique Title Requests, , the count of titles accessed; and Turnaway Reports, captured instances in which users tried to access titles not included in the permanent collection—a powerful sign that there are high user demand related topics. Through this systematic data-driven approach, the library is able to make informed and evidence-

based decisions about future acquisitions, ensuring that resources selected truly reflect user needs and academic priorities.

The Final Selection Phase

Based on the usage data and feedback collected, the University of Malaya Library proceeds to the final phase of the Evidence-Based Acquisition (EBA) implementation the title selection phase, which determines the materials to be retained for perpetual access.

This process typically involves internal evaluation sessions between subject librarians and the Collection Development Division to look at usage trends and academic relevance. In addition, consultations with faculties or subject coordinators are conducted to ensure that the selected titles are consistent with current curriculum, research focus areas, and institutional priorities.The final selection of titles is made in accordance with the deposit budget limit established at the beginning of the EBA program. For instance, from a total of 2,200 titles accessed through the *ScienceDirect EBA* program, 165 e-books and 5 e-textbooks were selected for perpetual access.

The selection process makes sure that only resources with proven usage and strong relevance to the university's academic work remain as part of UM's long-term digital collection. Data on the use of ScienceDirect also show that the access gained via the EBS model and the increase in the number of uses of such methods were significant. The number of readings increased from 7,435 in 2023 to 15,296 in 2024, while the number of unfulfilled requests (turnaways) increased to 35,247 over the same period. This trend indicates that the UM academic community is increasingly actively utilizing digital resources in teaching, learning, and research activities. Interestingly, the highest usage was recorded during the period from November to June, coinciding with the busy academic season.

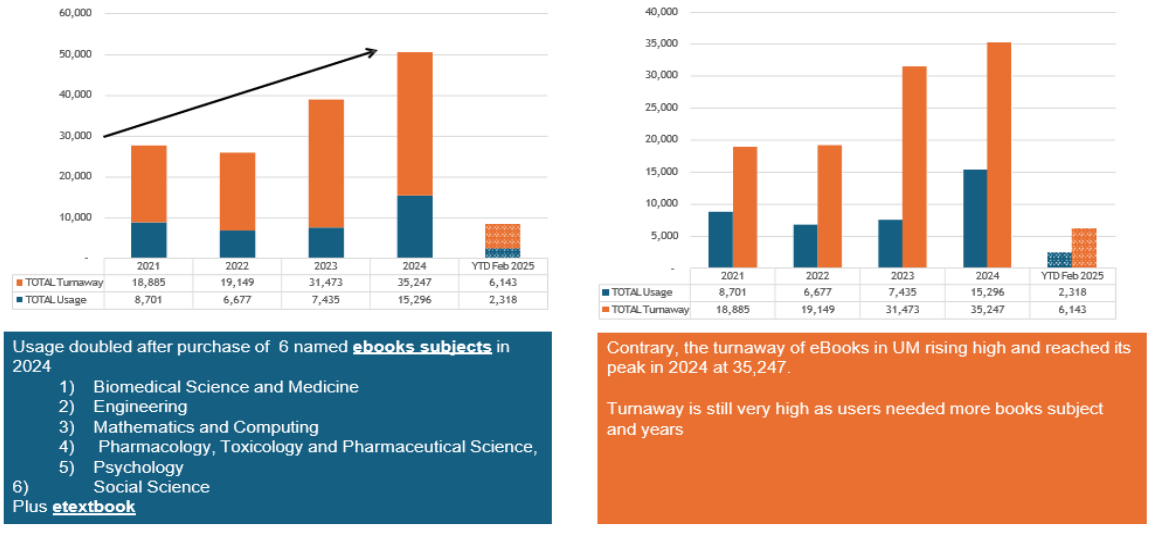

Figure 2. Usage and Turnaway Trends

	January	February	March	April	May	June	July	August	September	October	November	December
2021	775	566	634	803	976	970	381	525	392	603	1199	877
2022	1043	343	653	600	416	420	202	297	265	359	989	1090
2023	769	184	503	491	861	881	379	330	386	713	1156	782
2024	1428	384	1185	1126	1668	1299	976	1041	629	1558	2006	1996
YTD Feb 2025	1717	601										

	January	February	March	April	May	June	July	August	September	October	November	December
2021	2,434	880	1,386	2,072	2,291	1,923	853	715	731	1,086	2,262	2,252
2022	2,679	912	929	1,586	1,311	1,410	929	1,188	895	1,349	2,942	3,019
2023	4,027	1,478	1,644	2,351	3,219	3,411	1,338	1,409	1,108	2,683	3,850	4,955
2024	4,782	1,608	2,534	2,209	3,733	2,747	2,151	1,893	1,398	3,079	4,284	4,829
YTD Feb 2025	4,028	1,537										

Figure 3: Monthly Usage and Turnaway Trends

For the Emerald Enhanced Evidence-Based Acquisition (EBA) program, the title selection process has not yet been implemented because the 12-month subscription period will only end in December 2025. Therefore, the number of titles selected cannot be determined at this time. Moreover, the final acquisition decisions are then also backed by detailed statistical reports from the publishers supported by the library, which, as official records verified by the library itself, are provided and approved by the publisher, guaranteeing that every title is transparent, accountable, and evidence-based for retention.

Advantages of Evidence-Based Acquisition (EBA)

The cost-efficient library investments are one of the key benefits of EBA. One advantage to EBA includes cost-effectiveness and efficient library investments. When ScienceDirect EBA was introduced in UM in 2024, only 10% of all titles were available for final purchase, but the number of uses increased compared to the previous year, yet more than 80% of uses had those materials selected. It suggests a tremendously more effective, significant investment compared to traditional bulk purchasing methods.

The most significant advantage of the EBA model is its user-driven evidence-based approach. According to EBA, actuals are the primary collection selection object rather than relying on administrator assumptions and decisions. Monthly usage reports from publishers like Elsevier and Emerald allow libraries to confidently identify the most commonly accessed, read, or downloaded titles and the most popular topics. From this background, it is possible to create collections that represent researchers' and students' real needs. For example, the Faculty of Engineering extensively uses Materials Science and Chemical Engineering materials. The Management, Economics, and Social Enterprise collections are also actively used by the Faculty of Business,

and the Education, Sociology, and Psychology collections are heavily used by the Faculty of Education and Arts.

EBA directly solves the problem of buying unnecessary, unuseful, or irrelevant resources with this “purchase after evidence” method. It also cost money to purchase supplies that don't make a difference because each title will only be considered for purchase if enough data is supporting its use by the university community. Unused titles will not be retained or purchased. Moreover, the library's collection becomes more current, dynamic, and free from "dead collections."

Challenges in Implementing Evidence Based Acquisition (EBA)

The first challenge is the limited selection of publishers and the range of content available under the EBA model. Not all major academic publishers offer the EBA model, and each publisher that does offer it has a different scope of content, access period, and pricing structure. For example, Elsevier (ScienceDirect EBA) focuses heavily on science, technology, and medicine. Emerald (Enhanced EBA/Select) focuses more on management, education, and social sciences. Other publishers such as Taylor & Francis, Springer Nature, and Wiley still offer EBA models in a limited or market-oriented way.

However, although EBA permits evidence-based selection, overall content coverage will not always align with or support all faculties at a university. Also, with trial access typically limited to 12 months, you are actually dealing with a time limit for usage data. High-potential resources may get unfairly evaluated if users have not explored the entire collection in that time period. Now this will take a more active promotional approach to make the most of the trial period.

The second problem is that users are still not aware of all the opportunities the EBA provides The EBA collection, with information such as announcements via email and notices on library websites, is unknown to students and researchers. Among the main reasons is that users are more likely to search for resources using Google Scholar than through publisher platforms. In addition, users lack the ability to explore the eBook database. The low usage rate is not because the materials are irrelevant, but users are not aware of the existence of such materials.

EBA implementation also requires ongoing data management and evaluation to ensure the program remains relevant and effective. Factors such as changes in academic program structure, international student enrolment, and new research trends can change e-book usage patterns. Therefore, yearly evaluations of usage statistics, cost per title, and coverage areas should be conducted to maintain implementation effectiveness. In addition, libraries need to adapt to changes in publisher policies, including subscription structures, reporting methods, and access rules.

Impact on the University of Malaya Library Collection

EBA allows the library to select materials based on evidence of actual usage evidence, rather than first time viewing or requests. This is to ensure that the collections are accurately representative of the current requirements of UM students and researchers. For example, the 170 titles that were chosen for permanent access in ScienceDirect EBA (2024) accounted for over 80% of the total usage, it's proving that the materials selected were the most useful to the university. Meanwhile, the titles in the disciplines of Business, Management, Education, and Social Sciences in Emerald Enhanced EBA/Select (2025) have the highest reading rates, which are consistent with the research needs and faculty requirements. This method eliminates unnecessary or unused material while improving the library collection's impact and aligns with current academic needs.

Purchases have been done according to the faculty priorities or yearly forecasts in the preceding, rigid, long-term history of collection development. By introducing the idea of dynamic collections where resources are kept based on current user access data and interests, EBA has altered this paradigm. This dynamic collection's features include the following: usage data serves as the foundation for strategic decisions and increases the library's responsiveness to academic change; old materials that are no longer in use can be replaced with new titles in the same field; and the collection is continuously updated in accordance with shifting research trends.

Through metrics-based monitoring, EBA also improves the effectiveness of digital resource management by enabling librarians to evaluate the actual worth of each publisher or content. A more flexible budget management that allows funds can be reallocated according to the areas with the most actively used. For improved analytics and reporting, the main source for collection development reporting is the results of monthly access reports received from publishers such as COUNTER TR_B5 and Usage Summary Reports. Additionally, the implementation of EBA has introduced an analytics-based work culture among librarians, making them not just collection managers, but also information analysts who evaluate the scholarly impact of digital materials. This outcome directly improves data governance, collection performance evaluation, and strategic library reporting to library management.

The development of UM's collections and management of scholarly resources will continue to benefit in the long term from the implementation of EBA, which making the library more competitive and adaptable with the global trend of electronic resource management. In addition, the implementation of EBA can result in a more pertinent knowledge base with legitimate proof of use for every piece of content. In addition, access to world-class academic materials that are organized based on the real needs of users can enhance UM's reputation as a leading research university.

Conclusion

Overall, the implementation of Evidence-Based Acquisition (EBA) at the University of Malaya Library with two international publishers has helped build a collection that matches the users' actual needs through a solid

evidence and data-based process. The library achieves quality materials with the development and dissemination of evidence with the use of the Evidence-Based Acquisition (EBA) and sustainability in order that all investment can be realized strategically and that there will be a sustainable long-term impact on the library. The library has made improved use of EBA in the collection, which is more in line with their activities, and developed a learning culture of working together, transparency and evidence-based decision making.

Although there are several the challenges, the implementation of EBA has brought significant benefits to the effectiveness of university digital collection management. With strategic planning and continued support from the university, UM can strengthen its reputation as a pioneer in evidence-based collection development and the use of data in scholarly resource management. EBA should be maintained as an important element in the transformation of university libraries.

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Evaluation of the Strengthening of the Profile of Pancasila and Rahmatan Lil Alamin Students Program (SPP-RLA) Using the Participant-Oriented Countenance Stake Model

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Abstract: Character education has become a primary focus within global educational systems, particularly in shaping a generation that is prepared to face the challenges of an increasingly interconnected world. in Indonesia, character education is reinforced through pancasila-based programmes that integrate national and religious values. This programme aims to cultivate students who are not only academically proficient but also possess strong character and are ready to contribute to the global community. This study evaluates the effectiveness of the "strengthening the profile of pancasila and rahmatan lil alamin students" (SPP-RLA) programme in shaping students' character in accordance with the values of pancasila and the principles of rahmatan lil alamin. employing a participatory evaluation model based on countenance stake, this research assesses the processes, resources, and outcomes of the programme's implementation. The findings of this study provide insights into the challenges encountered in the programme's execution, including curriculum integration, teacher training, and community participation, as well as recommendations for further improvement to support the development of students' character.

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Introduction

Character education plays a crucial role in shaping a high-quality young generation, one that not only excels academically but also possesses strong moral values, integrity, empathy, and a sense of responsibility (Hairan et al., 2024; Ratnasari et al., 2024a). This approach is aligned with the nation's noble ideals, as outlined in pancasila, and is vital for thriving in a diverse and rapidly changing society. implementing character education requires a comprehensive strategy that involves collaboration between families, schools, and communities, creating a conducive environment for ethical development (Ratnasari et al., 2024a; Setyowati & Ningrum, 2020). This holistic approach ensures that the values being taught are integrated into daily life (sahrudin, 2024). Furthermore, character education is also important for preventing negative behaviors, encouraging personal growth, and preparing individuals to face the challenges of the industry 4.0 and society 5.0 eras (handayani et al., 2023). It is essential for fostering a generation that can contribute positively to national development by embodying qualities like trust, sincerity, and courage (Suwartini, 2017) overall, character education is highly necessary for building a generation that is intellectually capable and firmly rooted in the nation's core values, leading to a brighter and more harmonious future for society (Susanto, 2018).

Pancasila, as the fundamental ideology of indonesia, is composed of five core values that serve as a moral and ethical framework for individuals and the nation as a whole. These values are highly relevant in education for shaping students into responsible, ethical, and socially aware citizens (Nurhayati et al., 2022; Utaminingsih et al., 2023; Wirayuda et al., 2024) complementing this, the concept of rahmatan lil alamin or "a mercy to all of creation" aligns with pancasila's idealism by emphasizing inclusivity, compassion, and respect for the environment (Azizi & Masitoh, 2024; Fadillah et al., 2023) the integration of these two value systems helps students develop a holistic worldview where ethical considerations are intertwined with academic goals. Thus, education in indonesia aims to produce not only intelligent individuals but also compassionate and empathetic human beings.

To internalize these values, the pancasila student profile and rahmatan lil alamin program (SPP-RLA) was launched as a concrete initiative within the educational environment (Pratiwi et al., 2023; Wini widarini & Suterji, 2023). This program aims to produce individuals who are character-driven, responsible, and committed to global citizenship. The spp-rla has several key objectives, including integrating pancasila and rahmatan lil alamin values into the curriculum, developing critical thinking and problem-solving skills based on an ethical framework, and fostering an awareness of environmental and social responsibility among students (wini widarini & suterji, 2023; wulandari, 2023) through this program, education strives to produce future leaders who are sensitive to the moral, social, and ecological challenges of the contemporary world.

Although the spp-rla program is a very important initiative, its success and effectiveness cannot be assumed without a systematic evaluation. There is still a very limited understanding of the program's implementation and its impact on participants including students, teachers, and parents (Anggraeni & Setiawan, 2023; Lestari et al., 2023). This gap highlights the need for a comprehensive evaluation to ensure that the program is running

according to its stated goals and is providing optimal benefits. an in-depth evaluation not only measures final outcomes but also analyzes the entire process from planning to implementation, which is crucial for identifying strengths, weaknesses, and areas that need improvement (Suciati et al., 2021). Therefore, this research aims to fill this gap by conducting a holistic and participant-centered evaluation, which is much-needed for the program's future sustainability and refinement.

Building on the urgency of program evaluation, this study identifies a significant gap in the existing literature. while the spp-rla program has been launched, there has not been much research that deeply examines its implementation and effectiveness, especially from the perspective of the participants (students, teachers, and parents) who are the main actors in this program. A participant-centered evaluation is crucial for gaining a holistic understanding of the reality on the ground and for ensuring that the program is not just running, but is also accepted, internalized, and providing a real impact on everyone involved. therefore, a comprehensive evaluation is essential for identifying successes, challenges, and areas that need improvement so that the program can be implemented better in the future.

Based on the problems identified, this study has the primary objective of holistically evaluating the spp-rla program using the stake's participant-oriented countenance evaluation model. The specific objectives of this research are:

1. To describe the context, input, process, and outcome of the spp-rla program.
2. To analyze the assessments and reactions of the participants (students, teachers, and parents) toward the program.
3. To identify the alignment between the program's planned goals (intents) and the reality on the ground (observations).

This research uses the stake's participant-oriented countenance evaluation model as its theoretical foundation. this model provides a comprehensive framework for evaluating educational programs by integrating the diverse perspectives of stakeholders, such as students, teachers, and parents (Hidayat, 2018; Abdul manaf et al., 2014; Peng et al., 2024). Rooted in a responsive evaluation framework, this model emphasizes the importance of involving participants to ensure that the evaluation is aligned with the community's needs and values (Manaf et al., 2014).

The core of stake's countenance model is an evaluation process divided into two main stages: description and judgment. The description stage includes two things: the formulation of the program's ideal objectives (intents) and observations of the reality of its implementation on the ground (observations). Once the description is complete, the judgment stage is carried out by comparing the intents and observations to identify any gaps, successes, or challenges that have emerged. The uniqueness of this model lies in its emphasis on the participants' perspectives, where their voices become the primary data source for both the description and the judgment. Thus, the evaluation does not only measure goal achievement but also understands the program's

meaning and impact from the direct experiences of those involved (ferrero-ferrero et al., 2018; kurum & çınkır, 2019)

This research has dual significance, both theoretically and practically. Theoretically, this study contributes to the development of the literature on educational program evaluation by applying the countenance stake model within the context of character education in indonesia. Through this study, the methodological understanding of how this model can be effectively used to assess programs that focus on values and ethics will be enriched. Practically, the results of this research will provide very valuable input for policymakers, program implementers, and all relevant parties. The findings from this evaluation can be used to identify the strengths and weaknesses of the SPP-RLA program, thereby allowing for future improvements and refinements. Ultimately, this evaluation will support the sustainability and optimization of the program in achieving its main objective, which is to shape the character-driven profiles of pancasila and rahmatan lil alamin students.

Literature Review

Global and National Context: The Importance of Character Education

Character education plays a crucial role globally in shaping quality youth by instilling values such as morality, integrity, empathy, and responsibility (Rahmania et al., 2025). In indonesia, this is reinforced through pancasila-based programs within the national curriculum (Gusna et al., 2025), essential for helping the millennial generation navigate cultural changes in the digital era while maintaining integrity and noble character (Rahmania et al., 2025; Ratnasari et al., 2024).

Effective character education requires comprehensive collaboration among family, school, and community to ensure consistent value application in students' lives . A holistic approach integrating project-based learning, teacher role modeling, and community collaboration is necessary (Sari et al., 2025), though challenges such as limited resources and digital culture's negative influence persist (Pasaribu et al., 2025).

Character education is increasingly urgent to prevent negative behaviors and prepare individuals for industry 4.0 and society 5.0 challenges (Ratnasari et al., 2024). Rapid globalization and digitalization demand a generation that is intellectually skilled yet strongly rooted in the nation's core values (Primasari et al., 2019), serving as foundation for students' cognitive, social-emotional, and ethical development (Choliza & Fauzia, 2024).

Core Conceptual Framework of the Program

Pancasila serves as indonesia's ideological foundation and ethical-moral framework (Ali ridho & Rosyad, 2023). Its five core values are highly relevant in education for developing character, tolerance, social awareness, and national identity (Kurniawan, 2018; Puspita et al., 2024; Puspitasari, 2018), while fostering critical, collaborative, and innovative thinking essential for the 21st century (Aziz, 2024; Syam et al., 2023).

Rahmatan lil alamin ("grace for all nature") emphasizes inclusivity, compassion, and environmental respect, aligning with pancasila's humanity and social justice values (Ismail et al., 2024). This concept creates a learning environment that is academically excellent and ethically rich, producing a generation capable of being a moral and academic "grace" to their surroundings (Ismail et al., 2024).

Integrating pancasila and rahmatan lil alamin develops a holistic worldview balancing ethical and academic growth (Uliawati et al., 2025). This approach, particularly effective in madrasah settings, produces religiously grounded, socially responsible, and globally competent individuals who are both intellectually intelligent and compassionate (Uliawati et al., 2025).

Program Focus: SPP-RLA

The strengthening program for the pancasila and rahmatan lil alamin student profile (SPP-RLA) is an educational initiative designed to internalize noble values within educational environments (Hafriani, 2024). Its main goal is producing individuals with strong character, responsibility, and commitment to global citizenship (Lontoh et al., 2024 and Rahayu et al., 2023), enabling students to compete globally while maintaining national identity (Laghung, 2023 and Liu & Suastra, 2024).

The program focuses on character education through P5 (strengthening project for pancasila student profile) and PPRA(rahmatan lil alamin student profile) (Hafriani, 2024 and Maulana et al., 2024). It integrates pancasila's core values faith, global diversity, mutual cooperation, independence, critical thinking, and creativity into the curriculum (Rahayu et al., 2023), while emphasizing social-environmental awareness and ethics-based problem-solving through justice, tolerance, religious moderation, and multicultural values (Burhanuddin & Imron, 2023; Maulana et al., 2024). Implementation combines intracurricular, co-curricular, and extracurricular activities (tanjung, 2024) with real-world projects such as local wisdom exhibitions and sustainable lifestyle initiatives (Ali & Firmansyah, 2023).

Research Gap and Evaluation Urgency

Despite SPP-RLA's significance, systematic evaluation of its implementation and effectiveness remains limited. current literature lacks deep understanding of the program's impact, particularly from participants' perspectives (students, teachers, parents). This gap necessitates holistic, participant-centered evaluation to identify strengths, weaknesses, and areas for improvement, ensuring the program achieves its intended outcomes.

Theoretical Foundation of Evaluation: Stake's Countenance Model

This study employs stake's countenance model, chosen for its comprehensive evaluation framework structured around two stages: description and judgment (Stake, 1967). The description stage formulates ideal objectives (intents) and observes implementation reality (observations), while the judgment stage compares these to assess

congruence and identify gaps (Wood, 2001), providing a holistic view by examining antecedents, transactions, and outcomes (Sugian et al., 2025).

Stake's model uniquely emphasizes participant orientation, integrating diverse stakeholder perspectives and prioritizing views of those directly involved as primary data sources (josua et al., 2025a; weiss & weiss, 1983). this captures program meaning and impact from participants' direct experiences, ensuring context-based, responsive evaluation (nirtha et al., 2024). stakeholder involvement enhances findings' validity and utility while empowering participants, increasing likelihood that results will inform program improvement (morris, 2002; nolton & forsythe, 2024).

Research Significance

This research contributes to educational program evaluation literature, particularly regarding value internalization and character education. it specifically applies stake's participant-oriented countenance model within indonesia's unique context of character education integrating pancasila and rahmatan lil alamin values, enriching methodological understanding of evaluating complex, value-focused programs.

The evaluation provides valuable input for policymakers, educational administrators, and program implementers (madrasah heads and teachers). by identifying spp-rla's strengths and weaknesses, this research offers empirical data for program improvement and refinement, ultimately supporting the program's sustainability and optimization in achieving its goal of forming students' character profile.

Method

Type of Evaluation Research

This study is an evaluative research using the stake's countenance model with a participant-oriented approach. This model was chosen because it allows for a comprehensive evaluation of the pancasila student profile and rahmatan lil alamin program (SPP-RLA) by covering three main aspects: antecedents (inputs), transactions (processes), and outcomes. The participant-oriented approach was used to involve key stakeholders teachers, students, and parents so that the evaluation could provide a more holistic perspective on the program's effectiveness.

The research design combines qualitative and quantitative methods (a mixed-method approach) with a convergent parallel design. quantitative and qualitative data were collected simultaneously, analyzed separately, and then their results were compared and integrated.

1. Antecedents stage: the evaluation focuses on the program's context and inputs, including the program's alignment with the school's vision and mission, as well as the readiness of human resources and infrastructure.

2. Transactions stage: this evaluates the process of program implementation in both intracurricular and extracurricular activities, including teaching methods and student participation.
3. Outcomes stage: this assesses the program's results, such as changes in student character, academic achievement, and its impact on the school climate.

Location and Time

This research was conducted at an islamic senior high school (*Madrasah Aliyah*) in south Sulawesi, Indonesia. The study was carried out from october to november 2024.

Research Subjects

The research population consists of the school principal, teachers, students, and parents of students at a madrasah aliyah in south sulawesi, Indonesia. The sampling technique used was purposive sampling, which involves selecting samples based on specific criteria that align with the research objectives.

Table 1. Subjects of The Evaluation Research for The Pancasila Student Profile and Rahmatan Lil Alamin Program (SPP-RLA)

Participant Categories	Number of Samples
Madrasah Headmaster	1
Teacher	10
Student	40
Parent	20
Total	71

Data Collection Techniques and Instruments

This research uses a variety of techniques and instruments to collect quantitative and qualitative data for each evaluation component (antecedents, transactions, and outcomes).

Table 2. Data Collection Techniques And Instruments for The Evaluation of The Pancasila Student Profile And Rahmatan Lil Alamin Students Program (SPP-RLA)

Component	Data Collection Technique	Data Collection Instrument
Antecedents (Input)	Document Study, Observation, Interview, Questionnaire	Document Checklist Guide, Observation Guide, Semi-Structured Interview Guide, Likert Scale Questionnaire (1-5).
Transactions (Process)	Observation, Interview, Questionnaire, Document Study	Observation Guide, Semi-Structured Interview Guide, Likert Scale Questionnaire (1-5), Document Checklist

Component	Data Collection Technique	Data Collection Instrument
		Guide.
Outcomes (Result)	Non-Cognitive Tests and Assessments, Observation, Interview, Document Study, Questionnaire	Student Comprehension Tests, Character Assessment Rubric, Observation Guide, Semi-Structured Interview Guide, Document Checklist Guide, Likert Scale Questionnaire (1-5).
Participant Assessment	Interview, Questionnaire, Observation	Semi-Structured Interview Guide, Likert Scale Questionnaire (1-5), Observation Guide.

Results

Antecedents Component (Inputs)

The program evaluation of the project for strengthening the profile of pancasila students and the profile of *rahmatan lil alamin* students (*proyek penguatan profil pelajar pancasila dan profil pelajar rahmatan lil alamin* - P5-PPRA) is a systematic effort to analyze the effectiveness of the *merdeka* curriculum implementation at the junior secondary school level. This research employs the comprehensive stake's countenance model, with the primary focus on the antecedents component (input) to identify the program's readiness and potential for success.

Descriptive Matrix (Intent And Observation)

The descriptive matrix is a key instrument in the stake's countenance model used to illustrate the ideal plan (intent) and the actual condition (observation) of the P5-PPRA program. This matrix allows the evaluator to compare the expectations with the reality of the program's implementation.

Table 3 Descriptive Matrix of the Antecedent Component

Aspect	Intent (Plan)	Observation (Actual)
Program planning	Comprehensive plan involving multi-stakeholders	Level of involvement and depth of planning
Human resources	Teachers are competent and maximally trained	Actual capacity of teachers in implementing the program

The matrix indicates the existence of a potential gap between the ideal plan and the actual conditions in the implementation of the P5-PPRA program. This difference requires an in-depth analysis to identify the factors influencing the program's effectiveness.

Judgement Matrix (Standard and Assessment/Judgement)

The judgement matrix aims to measure the program's conformity to established standards, providing a qualitative assessment of various aspects of the P5-PPRA implementation.

Table 4 Judgement Matrix For The Antecedent Component

Criteria	Standard	Assessment/Judgement	Score
Planning	Participative and Comprehensive	Level of Stakeholder Involvement	3.5/5
Teacher Competence	Professional And Dedicated	Ability to Implement the Curriculum	3.2/5
Infrastructure	Supporting Innovative Learning	Readiness of Facilities and Infrastructure	3.7/5

The assessment results show that the program is in the fairly good category with a score range of 3-4. There is significant room for the development and improvement of the program's implementation quality.

Contingency Matrix

The contingency matrix helps identify the relationship between key variables in the implementation of the P5-PPRA program.

Table 5 Contingency Matrix for the Antecedent Component

Variable	Low	Medium	High
Teacher Readiness	20%	50%	30%
Infrastructure Support	15%	45%	40%
Stakeholder Involvement	10%	40%	50%

The matrix reveals a positive correlation between stakeholder involvement, teacher readiness, and infrastructure support in the success of the P5-PPRA program.

The evaluation of the antecedent component of the P5-PPRA program indicates moderate to positive implementation potential. Although there are some limitations, a strong foundation exists for future program development.

As preliminary recommendations for the antecedent component:

1. Improvement of teacher capacity through continuous training.
2. Development of supporting infrastructure for learning.
3. Strengthening of multi-stakeholder involvement in program planning.

Transaction Component (Process)

The evaluation research of the project for strengthening the profile of pancasila students and the profile of rahmatan lil alamin students (P5-PPRA) utilizes stake's countenance model, focusing on the transactions (Process) component. This participant-based evaluation approach aims to comprehensively uncover the effectiveness of the program's implementation through the perspectives of various stakeholders, including teachers, students, and external parties related to extracurricular activities.

Descriptive Matrix

The descriptive matrix is the initial stage in stake's countenance evaluation model, which describes the ideal plan (intent) and the actual conditions (observation) of the P5-PPRA program implementation. This matrix will show the gap between expectations and the reality of the program's implementation in the field.

Table 6 Descriptive Matrix of the Transaction Component

Component	Intent	Observation
Program implementation process	Program implementation according to plan with active student involvement	Variation in the level of student involvement and independence in the learning process
Project-based learning approach	Encouraging collaboration, creativity, and problem-solving ability	Teachers' ability to apply the project approach varies
Extracurricular activity support	Supporting the strengthening of P5-PPRA program values	Student enthusiasm in extracurricular activities varies
Implementation Challenges	Program Implementation Proceeds Smoothly Without Significant Constraints	There Are Several Constraints Related To Time, Classroom Management, And Teacher Capability

The results of the descriptive matrix show a gap between the ideal plan and the actual conditions of the program's implementation. although there is variation in implementation, the program generally shows positive potential in developing students' skills.

Judgement Matrix

The judgement matrix will evaluate the conformity of the program implementation with established standards, providing a comprehensive assessment of the P5-PPRA program's effectiveness.

Table 7 Judgement Matrix for The Process Component

Component	Standard	Judgement/assessment
Implementation process	Achievement of 80% of program objectives	65-75% of the target achieved
Project approach	Development of 4 key skills	Successfully developed 2-3 skills
Extracurricular activities	Supporting 100% of program values	Supports about 70-80% of program values

The assessment shows that the program has not fully met the established standards. There is significant room for improvement in the program's implementation and supporting competencies.

Contingency Matrix

The contingency matrix analyzes the relationships and interconnections between aspects in the implementation of the P5-PPRA program, identifying mutually influencing factors.

Table 8 Contingency Matrix for the Process Component

Variable Relationship	Relationship Influence	Influencing Variable
Teacher Competence- Project Implementation	Moderate Positive	Teacher Competence Significantly Affects Project Quality
Student Involvement-Learning Outcomes	Strong Positive	Higher Involvement Leads To Better Learning Outcomes
Extracurricular Activities - Character Development	Weak Positive	Extracurricular Contribution Is Still Limited

The analysis shows a complex correlation between the program aspects, with teacher competence and student involvement being key factors in the success of the implementation. The evaluation of the P5-PPRA program shows positive potential but requires systematic improvement. The success of the program depends on the development of teacher capacity, increased student involvement, and the synchronization between implementation aspects.

Outcomes Component

The evaluation of the outcomes component is a critical stage in analyzing the impact of the project for strengthening the profile of pancasila students and the profile of rahmatan lil alamin students (p5-ppra) program at the institution. This stage aims to measure the final results of the program, which include the transformation of student character, the improvement of social skills, and the impact on academic achievement. Utilizing the stake's countenance model, this research will deeply explore the program's effectiveness through comprehensive quantitative and qualitative instruments.

Descriptive Matrix

The descriptive matrix is a fundamental instrument for revealing the program's initial plan (intent) and the actual reality of its implementation (observation). At the outcomes stage, this matrix will illustrate the gap between the expected goals and the actual achievements of the P5-PPRA program in shaping character, enhancing creativity, and affecting students' academic performance.

Table 9 Descriptive Matrix of The Outcomes Component

Aspect	Intent (mean score)	Observation (mean score)
Pancasila character formation	4.5	4.2
Increase in creativity	4.3	4.0
Increase in collaboration	4.4	4.1
Impact on academic achievement	4.2	3.9

The analysis of the descriptive matrix shows a consistent decrease of 0.3 points in every aspect between the initial plan (intent) and the actual implementation (observation). This indicates a small but significant gap between the target and the achievement of the P5-PPRA program at the institution.

Judgement Matrix for The Outcomes Component

The judgement matrix will evaluate the program's achievement based on established standards, providing a critical assessment of the effectiveness of the P5-PPRA implementation in achieving character education goals.

Table 10 Judgement Matrix for The Outcomes Component

Evaluation Criteria	Standard	Actual Achievement	Judgement
Pancasila Character	90% met	85% met	fairly good
Student Creativity	80% developed	75% developed	good
Social Skills	85% increased	80% increased	good
Academic Achievement	75% increased	70% increased	fairly good

The judgement assessment shows that the p5-ppra program has achieved most of the established standards, with achievements ranging between 70-85%. Nevertheless, there is still room for improvement in the aspects of character and academic achievement.

Contingency Matrix

the contingency matrix will analyze the relationship and consistency between various program components, identifying the factors that influence the success of p5-ppra implementation.

Table 11 Contingency Matrix for The Outcomes Component

Variable Correlation	Correlation	Significance	Interpretation
Character - Creativity	0.75	Significant	Strong
Creativity - Achievement	0.68	Significant	Moderate
Collaboration - Achievement	0.62	Significant	Moderate

The contingency analysis reveals a significant positive correlation between the program aspects, with the strongest relationship being between character formation and the development of student creativity. The evaluation of the outcomes component of the P5-PPRA program at the institution shows a relatively successful implementation. The program has been able to shape student character, enhance creativity, and have a positive impact on academic achievement. Nevertheless, there remains a small gap between the plan and the implementation which requires further attention for the optimization of the program in the future.

Participant Component

The evaluation research of the project for strengthening the profile of pancasila students and the profile of rahmatan lil alamin students (P5-PPRA) program is a comprehensive study aimed at analyzing the implementation of the transformative education program. The context of this research is based on the urgent need to develop an educational model that does not merely transfer knowledge but also shapes students' character to be holistic, dignified, and civilized. The research utilizes stake's countenance evaluation model based on a participatory approach, which allows for in-depth data collection from various key stakeholder perspectives: teachers, students, and parents. This method allows the researcher not only to assess the program's output but also to understand the program's process, context, and impact holistically.

Descriptive Matrix

The descriptive matrix is a key instrument in the stake's countenance evaluation model that aims to identify the gap between the program's intent (goals) and the actual observation in the field. In the context of the p5-ppra program, this matrix will reveal the extent to which the program's implementation aligns with the initial plan and the expectations of the stakeholders.

Table 12 Descriptive Matrix of The Participant Component

Aspect	Intent	Observation	Description
Program Objectives	To form student character through the comprehensive internalization of pancasila and *rahmatan lil alamin* values	Partial implementation with a focus on cognitive aspects compared to affective aspects	A gap exists between the ideal concept and actual practice
Teacher	Teachers as active facilitators	Teachers still predominantly	Teacher capacity in

Involvement	capable of transforming character values through innovative pedagogical processes	use conventional methods with an instructional approach	implementing a transformative approach is still limited
Student Participation	Development of soft skills through active and critical involvement in every stage of the program	The level of participation varies, some students show high enthusiasm, but others remain passive	Student motivation and involvement are uneven

The descriptive matrix reveals the complexity of the P5-PPRA program implementation, which requires a systemic and transformative approach. The gap between intent and observation indicates the need for strategic intervention in every aspect: program objectives, teacher involvement, student participation, and parental support. The key to the program's success lies in the ability to create a holistic educational ecosystem, where every stakeholder plays an active role in the process of shaping student character.

Judgement Matrix

The judgement matrix is an evaluation stage that focuses on assessing program achievement based on established standards. In the context of P5-PPRA, this matrix will evaluate the extent to which the program meets the previously formulated success criteria.

Table 11 Pancasila Character Formation

Aspect	**Detail**
Ideal Standard	90% of students demonstrate holistic character based on pancasila values
Actual Achievement	65% of students show partial change in character aspects
Achievement Indicator	increased awareness of pancasila values

Table 12 Teacher Pedagogical Competence

Aspect	**Detail**
Ideal Standard	All teachers are competent in the transformative approach to character formation
Actual Achievement	40% of teachers understand the transformative pedagogical approach
Achievement Indicator	Ability to transform character values

Table 13 Parent Involvement

Aspect	**Detail**
Ideal Standard	80% of parents are actively involved in the character education program
Actual Achievement	35% of parents are involved in the program
Achievement Indicator	participation in school activities

Table 14 Program Social Impact

Aspect	Detail
Ideal Standard	Formation of a comprehensive character education ecosystem
Actual Achievement	Minimal change in the surrounding social environment
Achievement Indicator	Change in social interaction patterns

The judgement matrix reveals the complexity of the P5-PPRA program implementation, with achievements still far from the ideal standard. All four key aspects show a significant gap between expectations and the reality of the program's implementation.

Discussion

Analysis of the Antecedent (Input) Components of the Spp-Rla Program

Analysis of the program's antecedent (input) components reveals a significant gap between the ideal plan (intent) and the actual conditions in the field (observation). This gap was identified in two fundamental aspects: program planning and human resource readiness (teachers). ideally, program planning is expected to be comprehensive and involve multi-stakeholder participation. However, observational findings indicate that the level of stakeholder involvement in practice still varies.

A similar gap is evident in the human resources aspect, where teachers are expected to be competent and maximally trained to implement the program. In reality, the actual capacity of teachers in the field remains limited. data validation from the judgment matrix reinforces this finding. The program planning aspect only received a "fairly good" score (3.5/5), and the teacher competence aspect was rated lower (3.2/5). These scores quantitatively indicate significant room for improvement in the program's foundation.

Findings at this input stage have crucial implications for the subsequent stages of the program. Inadequate inputs, particularly in underdeveloped planning and limited teacher competence, directly impact the quality of process implementation (transactions) and the achievement of results (outcomes). Logically, it is difficult to expect optimal implementation quality of project-based learning (PBL) or extracurricular activities (as part of the process) if the teachers, as the main facilitators, do not yet have adequate capacity and the planning has not involved all parties.

Theoretically, this finding is highly consistent with the stake's countenance model framework used in this study. This model emphasizes the importance of evaluating antecedents (inputs) as a basic step to assess the alignment between the program's fundamental elements and its intended goals (Gondikit, 2018; Sugian et al., 2025). This focus on antecedents is crucial for understanding the program's initial conditions, which is essential for effective improvement and evaluation (Lestari, 2023). The gaps in input identified in this study indicate that the program's foundation is not yet solid.

Support from the literature strengthens this analysis. the varied stakeholder involvement in planning (input) indicates the need for a more holistic and participatory curriculum design approach, which aligns with comprehensive evaluation models (Alexander & Hjortsø, 2019; Murillo & Sánchez, 2024). Furthermore, the low score for teacher competence highlights the urgency of continuous professional development. Stake's model can serve as a structured framework for evaluating teacher training programs themselves, ensuring inputs (such as curriculum and resources) are aligned with desired outcomes (Petronzi et al., 2023), and identifying areas for improvement in sustainable teaching practices (Jumaeda, 2022).

Ultimately, this antecedent analysis successfully highlights the gap between the "ideal program theory" (what should work) and the "program theory-in-use" (what is actually happening in the field). The structured approach of stake's model proved effective in identifying discrepancies between the program's theoretical framework and its practical implementation by evaluating the congruence between intent and actuals (Gondikit, 2018; Jumaeda, 2022; and Putrindi et al., 2023)

Analysis of the Transaction (Process) Component of the Spp-Rla Program

As implied by the weaknesses in the antecedent component, the analysis of the transaction (process) component also reveals a gap between the ideal plan and actual implementation in the field. Observational findings identified a noticeable variation in the level of active participation and student autonomy during the learning process. Furthermore, variations were also revealed in the teachers' ability to apply the program's core method, namely project-based learning (PBL).

The judgment matrix quantitatively confirms this process gap, showing that the overall program implementation only reached 65-75% of the established targets. Further analysis identified the main causal factor for this low process achievement as the varied ability of teachers in applying the transformative pedagogy methods essential for this program. Many observed teachers still tended to revert to conventional, teacher-centered approaches. This was exacerbated by the weak contribution of extracurricular activities in reinforcing the program's values.
The implication of this finding is very clear: teacher competence is the key factor determining the quality of the learning process. Therefore, strategic recommendations must focus on continuous teacher capacity building, for example, through intensive training, workshops, or coaching/mentoring in pbl implementation. Additionally, there needs to be better synchronization between intracurricular and extracurricular activities so they can mutually support each other.

Theoretically, this finding directly intersects with transformative pedagogy theory, which emphasizes the teacher's role as a facilitator. Instead of merely transferring knowledge, teachers should guide students by providing feedback and direction (Machanova, 2025 and Williams, 2012), as well as aligning projects with student interests and curriculum goals (Damayanti, 2023). The teachers' failure to apply this indicates the transformation process has not occurred. Similarly, project-based learning (PBL) theory demands strong teacher competence in designing projects that foster critical thinking and collaboration (Eswaran, 2024), where this

competence significantly impacts implementation effectiveness (Putrantasa et al., 2024). Challenges such as time constraints (Zahra & Koimah, 2024) faced by teachers in the field, as found in this study, further widen the gap.

Within the framework of stake's countenance model, the gap in this transaction component is vital. this model helps identify that an inadequate implementation process such as inadequate teacher preparation or resource allocation is the reason why the program's outcomes are not optimal (Amiri, 2025). This finding confirms that to improve outcomes, systemic solutions like teacher training and policy reforms are necessary to ensure effective PBL implementation (Amiri, 2025).

Analysis of the Outcomes Component of the Spp-Rla Program

In the outcomes component, the evaluation indicates that the program is deemed "relatively successful." Nonetheless, this finding is nuanced: quantitative data reveals a small yet consistent gap of -0.3 points between the ideal plan (intent) and actual achievement (observation) in every aspect measured (character, creativity, collaboration, and academic achievement). This consistent gap across all aspects suggests a systemic, though not fatal, implementation issue.

Behind this gap, validation data shows that the program's internal logic is functioning well. a strong positive correlation was found between character formation and the development of student creativity (0.75), as well as a significant positive correlation between creativity and academic achievement (0.68). This finding is crucial as it demonstrates that if executed correctly, the program indeed has the potential to achieve its goals holistically.
The implication is that the program has had a tangible impact, but it still requires optimization to close the -0.3 point gap. Aspects that were still rated "fairly good" in the judgment matrix (such as pancasila character and academic achievement) require more focused intervention. Recommendations that can be proposed include implementing more intensive formative evaluation strategies to monitor student progress periodically, as well as making adjustments (tuning) to the curriculum and teaching methods to enhance effectiveness.

Theoretically, this analysis of the outcomes component demonstrates the strength of Stake's Countenance Model. This model is explicitly designed to evaluate the congruence between intended outcomes (ideal plan) and observed outcomes (actual achievement) (Amiri, 2025; Josua et al., 2025 and wood, 2001). The model's structure, which includes antecedents, transactions, and outcomes, allows for a detailed examination of each program phase, including the alignment of student results with curriculum objectives (Retnowati et al., 2023). The finding of small "discrepancies" (-0.3 points) in this study aligns with the use of similar models that also identify areas for improvement, rather than simply labeling a program as a failure (Gondikit, 2018 and Retnowati et al., 2023)

Furthermore, this finding confirms that program evaluation is not a binary "Stake's model facilitates the understanding that success is multidimensional (cuypers, 2022; renger et al., 2023) and often subjective,

depending on stakeholder perspectives (barros & ribeiro, 2018). by comparing intents and observations, this model is capable of handling complex evaluations (granja-correia et al., 2025), identifying nuances of success, and pinpointing specifically where shortcomings lie that need to be addressed for future program optimization.

Analysis of Participant Judgment on the Spp-Rla Program

Analysis from the participants' perspective (teachers, students, and parents) presents a more critical and in-depth picture, providing a sharp contrast to the previous quantitative findings. Qualitative data and participant judgments indicate a significant gap between the program's actual practice and its ideal concept. participants viewed that the program, in practice, remains overly focused on cognitive aspects and tends to neglect affective aspects. Additionally, they also highlighted the limited capacity of teachers in using transformative methods.
Data validation from the judgment matrix completed by participants strongly supports this finding. actual achievement was rated far below the ideal standard. For example, in the character formation aspect, participants rated the achievement at only 65% of the 90% ideal standard. The most drastic gap was seen in the assessment of teacher pedagogical competence, which was rated at only 40% of the 100% ideal standard. This finding clearly indicates participant dissatisfaction and an on-the-ground reality that differs from the quantitative outcome data.

The implication of this finding is fundamental: quantitative data alone is insufficient to capture the complexity of a character education program. Participant perspectives provide crucial context and validation that reveal real challenges in the field such as teachers' lack of understanding of the program's essence and variations in student participation which might be missed by quantitative figures. Therefore, the main recommendation is to substantively increase participant involvement, for example, through routine dialogue forums, joint workshops, or structured feedback platforms, so their voices are heard in program improvement.

Theoretically, this analysis highlights the value of the "participant-oriented" approach inherent in stake's countenance model (Ilaneza, 2009 and Siswanto, 2009). This approach ensures that evaluation does not solely rely on numerical data, but also seeks to understand the subjective meaning and context from the perspective of those directly involved (Boody, 2009 and Maxwell & reybold, n.d.). Participant perspectives provide validation and context (Wood, 2001) and reveal subjective meanings that cannot be captured by quantitative data alone (Nirtha et al., 2024). The gaps revealed from their perspectives such as the lack of teacher participation identified in similar program evaluations (Gondikit, 2018) are key drivers for more relevant and effective program improvements. By involving participants, the evaluation's validity increases, and the utilization of findings for program development becomes more assured (Boody, 2009 and carey & smith, 1992).

Conclusion

This study utilized a mixed-method approach to comprehensively evaluate the spp-rla program across four main

components. In synthesis, the findings show a clear correlation among these four components. Deficiencies in the input (antecedents) component, such as underdeveloped planning and suboptimal teacher competence, directly impacted the quality of the process (transactions). This suboptimal learning process, in turn, led to small yet significant gaps in the outcomes.

Although the program as a whole was deemed "relatively successful" with fairly good quantitative achievements, the evaluation from the participants' perspective revealed a larger gap between the program's ideals and its practice in the field. Participant views indicated that the program remains focused on cognitive aspects, and that teacher competence and parental involvement are still below the expected standards. This interconnectedness between components confirms that improvements in one aspect, such as enhancing teacher competence at the input stage, will potentially increase the overall quality of the program's processes and results.

This study has several limitations that need to be considered. First, the short duration of the research may affect the ability to observe the program's long-term impacts, especially on student character changes which require more time. Second, the limited sample size may affect the generalizability of the findings to a broader population. Lastly, due to time and resource constraints, this study may not have been able to explore every aspect of the program in-depth. These limitations suggest the need for further research with a longer duration and a larger sample to strengthen the findings and provide more solid recommendations.

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Analysis of Posters Awarded in the Typography Category at Graphic Designers Professional Association Exhibitions

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Abstract: Typography plays a critical role in graphic design in effectively conveying a message. Typographic elements enhance the aesthetic and communicative power of design by creating a visual language that goes beyond simply conveying information. This study examines poster designs that won awards in the typography category at exhibitions organized by the Graphic Designers Association (GMK), Turkey's most established professional organization in the field of graphic design, between 2007 and 2023. In the research, 15 poster designs that won awards in the typography category starting from the 26th exhibition were analyzed according to a 13-item evaluation scale created as a result of a literature review. This scale is structured under the headings of poster evaluation criteria (message, message-image integrity, verbal hierarchy, visibility, balance-emphasis, continuity-integrity, suitability for purpose) and typographic fundamentals (typeface selection, typeface size, spacing, color usage, emphasis and hierarchy, legibility/readability). The findings reveal that typographic elements are used with different strategies in message delivery, creating visual hierarchy, and ensuring image-text integrity. Various trends have been identified in award-winning works, such as the use of typography as an image, organic typography applications, typeface design with cultural codes, and animated poster approaches. The research provides a reference-quality evaluation scale for academic and professional work in the field of posters and typography.

Keywords: Graphic Design, Typography, Poster Design, GMK, Visual Communication

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Introduction

Graphic design is an indispensable part of modern life as one of the most effective tools of visual communication. Graphic design is a visual communication art, and its primary function is to convey a message and promote a product or service (Becer 2008; Çakır et al., 2029; Dalkıran & Ünal, 2024; Öztürk & Ünal, 2023;

Ünal, 2024; Ünal & Demirel, 2024). In this context, typography stands out as one of the fundamental building blocks of graphic design. Typography is not only the technical arrangement of text, but also an element that strengthens and emphasizes the meaning of the message as a visual language and adds aesthetic value.

Posters are one of the most common products of graphic design. Posters can be image-intensive or typography-intensive, depending on the designer's artistic and communication style. Modern art and design movements such as Cubism, Expressionism, Art Nouveau, Art Deco, Bauhaus, and the International Typographic Style have had a significant impact on the development of contemporary poster language (Becer, 2008: 201). In this context, typography-heavy poster designs emerge as an important approach that enables the message to be conveyed directly and powerfully.

The Graphic Designers Association (GMK) plays a critical role in the development and professionalization of graphic design in Turkey. Founded in Istanbul in 1978 under the name Grafikerler Meslek Kuruluşu (Graphic Designers Association), GMK aims to develop graphic design in Turkey, bring designers together, and protect professional rights. The organization creates a comprehensive selection of graphic products produced during the year at its annual Graphic Design Exhibition and awards them in various categories.

The aim of this research is to examine poster works that have won awards in the typography category at exhibitions organized by GMK and, in doing so, to create an evaluation scale in the field of poster and typography. The study covers 15 poster designs that won awards in the typography category at exhibitions held between 2007 and 2023.

Highlighting the exhibitions, events, and seminars organized by GMK, which brings together established professionals in the industry and academia with those seeking to develop themselves in the field, and evaluating the work done, this research will be an important resource in the field of graphic design.

Conceptual Framework

Poster Design and Evaluation Criteria

A poster is a promotional medium of varying sizes that is affixed to walls or billboards on streets, squares, and avenues where people live and gather, and is therefore seen by passersby (Kaptan, 1996). Posters are graphic products in which design and artistic concerns carry equal weight. The primary purpose of a poster is to convey a message. Therefore, it is critical that the design is effective in terms of communication.

The basic criteria to be considered when evaluating a poster design are as follows:

Message: The designer must clarify the message to be conveyed through the poster and create a visual system that conveys the desired information as directly as possible (Becer, 2008: 202).

Message-Image Integrity: It should be investigated whether the idea underlying the design can be emphasized more effectively through photography, illustration, or pure typography.

Verbal Hierarchy: The designer should establish a hierarchical structure among the verbal information on the poster, such as the title, subtitle, and slogan, to guide the viewer according to the order of importance in the message.

Visibility: The visual appeal and attention-grabbing power of a poster are decisive in getting the message across to the target audience.

Balance and Emphasis: If a poster is to be designed according to symmetrical balance, it must be divided exactly in the middle. In asymmetrical balance, elements of different weights must create a balanced composition. Emphasis determines which element will be highlighted in the design.

Continuity and Integrity: Continuity in poster design is the ability to systematically direct the viewer's eye in a direction predetermined by the designer. Unity ensures that all parts of the poster appear as a single unit.

Suitability for Purpose: A poster is designed for a specific purpose, and the visual language used should be appropriate for that purpose.

Typographic Fundamentals

Typography is an art and science field concerned with the arrangement of typefaces and the design of typeset text. According to Sarıkavak (2014: 7), "typography and design are almost synonymous." The correct use of typography enhances the readability and aesthetics of text.

Font Selection: Typefaces are a fundamental element in typographic design. Serif typefaces provide a formal and traditional look, while sans-serif typefaces offer a more modern and clean appearance. The choice of typeface should be made considering the purpose of the text and the target audience.

Font Size: Until the 18th century, no measurement system had been established in typography. This standard was implemented based on the "Punto" unit. One punto is 0.37583 mm and is currently accepted among international measurement units (Becer, 2011: 180).

Spacing Pattern: In typographic design, spacing plays a crucial role in achieving a flawless design. Spacing adjustments such as character spacing, word spacing, and line spacing are critical for readability and perceptibility.

Use of Color: Color directly affects the design when combined with the text area. The text must have sufficient

contrast with the background color to be legible.

Emphasis and Hierarchy: Text hierarchy indicates varying degrees of importance through font size and/or font style. The most commonly used method of creating emphasis is to convert a word from regular text to italics or use bold characters.

Readability/Readability: Readability depends on the font and letter size, while legibility is based on the entire design (Sarıkavak, 2004: 66). It is about creating a pleasant reading experience.

Method

This study examines 15 poster designs that received awards in the typography category at exhibitions organized by GMK between 2007 and 2023. The works were evaluated in chronological order from the 26th exhibition onwards.

The evaluation criteria used in the study were developed based on a literature review. The evaluation scale consists of 13 items under two main headings:

According to Poster Evaluation Criteria

- Message
- Message-Image Consistency
- Verbal Hierarchy
- Noticeability
- Balance and Emphasis
- Continuity and Integrity
- Appropriateness

According to Typographic Principles

- Font Selection
- Font Size
- Spacing
- Color Usage
- Emphasis and Hierarchy
- Readability

Each poster has been analyzed and interpreted in detail according to these criteria.

Findings

The 15 award-winning poster designs examined in the study were categorized into five main groups based on typographic approaches and design strategies.

Use of Typographic Images

Posters Under Review: Figure-1, Barenboim (2007), Figure-2, Caz (2007), Figure-3, Bach İstanbul'da (2008)

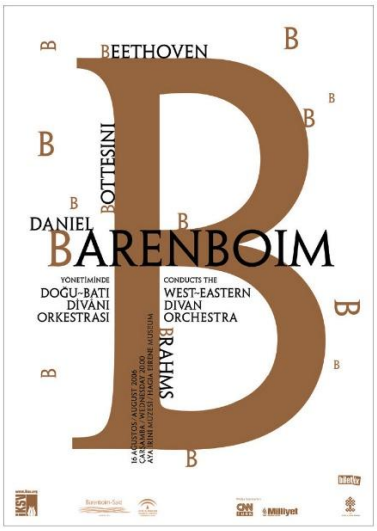

Figure 1

Figure 2

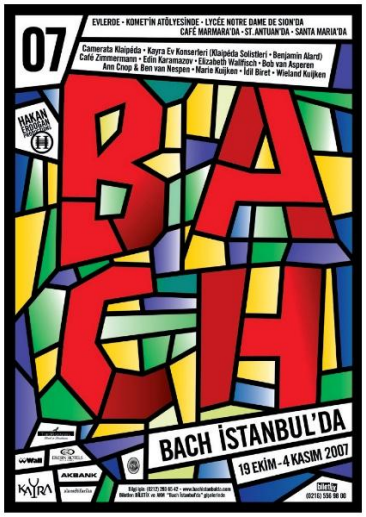

Figure 3

In the posters included in this group, typographic elements are used not only as a means of conveying information but also as visual imagery. In the Barenboim poster, the letter "B" both emphasizes his name and alludes to other names in the orchestra. The large and small B letters scattered throughout the composition evoke floating musical notes, creating a unity of message and image. In the jazz poster, the letter "J" is formed from many small "j" letters, resembling a saxophone instrument. This approach, moving from part to whole, reveals the visual power of typography. The Bach in Istanbul poster, inspired by the De Stijl movement, uses geometric shapes to form the word BACH, thus combining modern art and typography. The common point in these three works is that the typographic elements are designed not only to be read but also to be seen and experienced.

Message-Image Consistency Strategies

Posters Under Review: Figure-4, 28. International Istanbul Film Festival (2009), Figure-5, Ya Al Ya Terket (2009), Figure-6, Designing a Design Newspaper (2010)

Figure 4

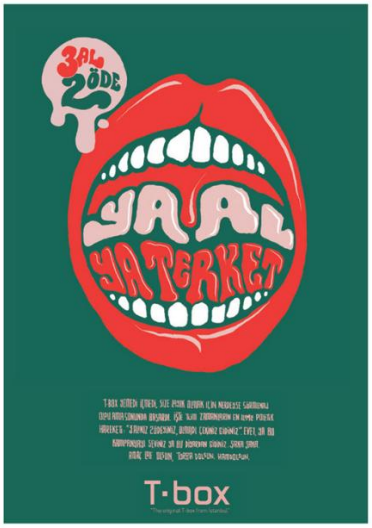

Figure 5

Figure 6

This group emphasizes the organic connection between message and image. The Film Festival poster uses interconnected letters to symbolize unity, while different colors represent diversity and polyphony. The Ya Al Ya Terket poster visualizes the act of announcing or declaring with a slogan placed inside an open-mouthed image. The message is powerfully reinforced through organic typography created using clothing. In the Design Newspaper Design poster, the image of a periodical draft is integrated with typographic layout, and the bold font used in the columns and headlines is chosen to suit the theme. In these posters, the message is supported not only verbally but also through visual strategies, providing multi-layered communication.

Organic and Experimental Approaches

Posters Under Review: Figure-7, İKSV Design Biennial (2012), Figure-8, IKEA Evinizi Düzenler (2015), Figure-9, Yunus Emre (2018)

Figure 7

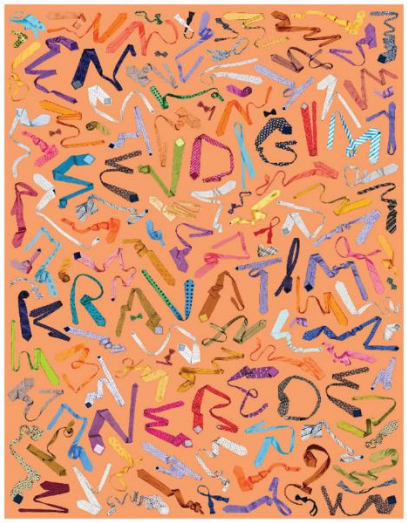

Figure 8

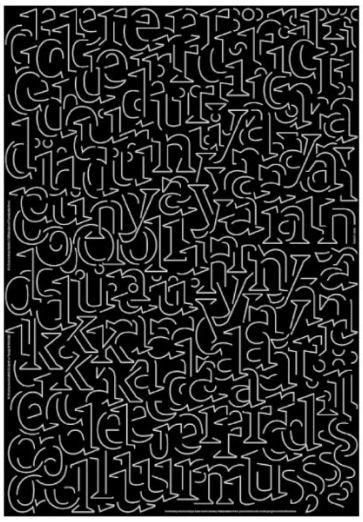

Figure 9

The works in this group showcase experimental approaches that go beyond the traditional use of typography. In the poster for the IKSV Design Biennial, themed "Imperfection," some extensions of the characters have been removed, depicting them as incomplete/imperfect, thus integrating typography with content in a formal way. The IKEA poster uses organic typography created from clothing to visualize the theme of disorder while enhancing readability. In the Yunus Emre poster, a complex typographic arrangement hides a quote by Yunus Emre, but this approach makes it difficult to read. These examples show that pushing the boundaries to increase the expressive power of typography can yield both successful and risky results.

Mobility and Dynamism

Posters Under Review: Notes Within Origins (2016), Independent Wednesday (2020), Together (2022)

The posters in this group enrich the viewer experience by adding movement and dynamism to typographic elements. In the Notes Within Notes poster, the slogan created for the main title reinforces the message by connecting the letters, while the extensions coming out of the letters point to the films to be shown. The Independent Wednesday and Together posters feature animated posters. In Independent Wednesday, the vertical accents of the characters expand and contract in a dynamic motion, while in Together, blocks rotate from the center to form a spiral, presenting both Turkish and English versions with each rotation. These animated approaches transcend the static nature of typography by leveraging the capabilities of the digital environment, creating a contemporary language of communication.

Cultural Codes and Typeface Design

Posters Under Review: Figure-10, Neşet Ertaş 50th Anniversary Project (2012), Figure-11, The Dialogues (2017), Figure-12, Faust (2019)

Figure 10

Figure 11

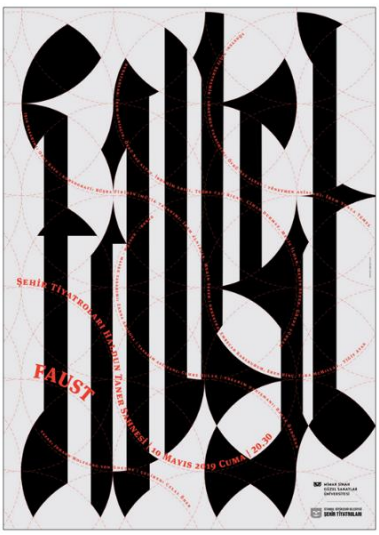

Figure 12

The work in this group creates original typefaces and visual languages by integrating cultural codes into typography. The Bozkır Typeface, designed for the Neşet Ertaş project, combines old kilim motifs with Turkish folk music. Although the motifs reduce legibility in the capital letter arrangement, cultural identity is strongly emphasized. On the Dialogues poster, the main title is written normally on the background and then rewritten with interconnected letters to reinforce the message of "dialogue"; a sans-serif typeface suitable for a modern art collection was chosen. In the Faust poster, characters arranged in a Gothic style were chosen to suit the story of a man who sold his soul to the devil, with variable horizontal accents added to characters with fixed vertical accents using circles. These works demonstrate how typography can be used as a tool that carries and transmits cultural memory.

Conclusions and Recommendations

In this study, 15 poster designs that received awards in the typography category at exhibitions organized by GMK between 2007 and 2023 were examined according to a 13-item evaluation scale created as a result of a literature review. The findings reveal that typography is used in a multifaceted and layered manner in poster design.

Five main trends were identified in the posters examined: (1) Using typographic elements as images, (2) Developing organic strategies for message-image integrity, (3) Experimental and boundary-pushing approaches, (4) Adding movement and dynamism, (5) Designing original typefaces with cultural codes. These trends demonstrate that contemporary poster design in Turkey exhibits rich diversity and creativity in the use of typography.

The research results reveal that typographic elements used in award-winning works, whether serif or sans serif, distorted or specially created, are used effectively to both convey the message in a memorable way and ensure visual integrity. In successful examples, typography has gone beyond being merely a means of conveying information and has become a tool for creating a visual experience and meaning.

On the other hand, readability and perceptibility issues have also been observed in some works. In particular, overly compressed spacing and excessively complex typographic arrangements can create situations where aesthetic concerns take precedence over functionality. This situation once again emphasizes the importance of the balance between form and function in typography design.

The evaluation scale created in this study can serve as a reference model for academic and professional studies in the field of poster and typography. Future research may include adapting this scale to different design products (book design, corporate identity, web design, etc.) or examining the use of motion typography in digital environments as a separate category.

In conclusion, the posters awarded at GMK exhibitions constitute an important archive in terms of

demonstrating the development of typography culture in Turkey and the level achieved by contemporary graphic design. This study was conducted with the aim of systematically evaluating this archive and creating a resource for future generations of designers.

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Development of Digital Technology and Its Impact on Micro, Small, and Medium Enterprises in Wind Power Tourism Areas

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Abstract: The rapid growth of digital technology is significantly impacting the tourism sector, especially in Wind Power Plant (WPP) areas in eastern Indonesia. While digital tools offer opportunities for operational efficiency, market expansion, and enhanced competitiveness for Micro, Small, and Medium Enterprises (MSMEs), their adoption and understanding in these regions face substantial obstacles. This qualitative study, using in-depth interviews and focus group discussions, investigates MSME actors' experiences and perceptions of digital technology's development and its influence on their tourism business management. The research aims to clarify these challenges, opportunities, and direct impacts, ultimately providing insights and recommendations for the sustainable and competitive development of technology-driven MSMEs in tourism.

Keywords: Digital Technology, MSMEs, Wind Power Plant Tourism, Qualitative Research, Tourism Development, Eastern Indonesia.

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Introduction

The development of digital technology has fundamentally revolutionized various aspects of life, with its impact profoundly felt in the business and tourism sectors globally. This technology has not only enhanced operational efficiency and accessibility but also substantially enriched customer experience (Prajapat & R, 2024; Berry et al., 2024). In the tourism industry, digitalization has transformed how individuals plan, book, and enjoy trips, thanks to the convenience of online booking platforms, mobile applications, and the integration of immersive technologies like virtual and augmented reality (Prajapat & R, 2024; Berry et al., 2024). Furthermore, the use of data analytics and artificial intelligence enables more personalized travel experiences tailored to individual preferences, while social media platforms have become an integral part of travel decision-making and sharing experiences (Majumder, 2019; Konstantinova, 2019; Berry et al., 2024). In the business realm, digital technology has expanded global market reach, allowing companies to operate across geographical boundaries and fostering innovation through the development of new business models and comprehensive digitalization strategies to enhance competitiveness (Rhena et al., 2024; C & R, 2018; Konstantinova, 2019). This digital transformation has collectively reshaped consumer behavior and driven competitiveness across various sectors.

The impact of digital technology on the tourism sector is extensive, transforming operations, marketing, and consumer interactions. The integration of information and communication technology (ICT), artificial intelligence (AI), virtual reality (VR), and social media has enhanced the efficiency, personalization, and accessibility of tourism services (Kuzman et al., 2024; Prajapat & R, 2024; Sivarethinamohan, 2023). Online booking systems have simplified travel planning and broadened the reach of international tourism (Chatzisavva, 2018; Yakubovskiy & Kyrychenko, 2024), supported by data-driven internal process optimization (Dar & Dar, 2024). In marketing, social media and digital platforms are vital for promotion and branding, enabling more targeted marketing through CRM and big data analytics (Dar & Dar, 2024; Chatzisavva, 2018; Kuzman et al., 2024). Consumer interaction has also become more personalized through customized recommendations and seamless mobile experiences, increasing customer engagement and loyalty through online reviews and social media (Sivarethinamohan, 2023; Chatzisavva, 2018). While offering numerous benefits, digitalization also presents challenges such as the need for digital competencies and the potential for technological disruption (Karimov & Khujanazarova, n.d.; C & R, 2018).

In this context, this research focuses on Wind Farm Tourism (PLTB) located in Sidenreng Rappang Regency, South Sulawesi, Indonesia. The presence of this Bayu Power Plant (PLTB) not only provides a source of renewable energy but also creates a distinctive visual landscape, making it an attractive and unique tourism potential in the region (Wardhani et al., 2023). Sidrap Wind Farm Tourism has become a major attraction with thousands of domestic tourist visits in 2021, demonstrating the positive dynamics of the accommodation and food & beverage sectors' contribution in Sidenreng Rappang Regency (Badan Pusat Statistik Kabupaten Sidenreng Rappang, 2024). This spillover effect phenomenon has great potential to drive the growth of Micro, Small, and Medium Enterprises (MSMEs) in surrounding villages like Mattirotasi and Lainungan, which have good road accessibility.

However, Micro, Small, and Medium Enterprises (MSMEs) in the PLTB area face various challenges and opportunities with the adoption of digital technology. One of the main challenges is the lack of understanding of digital technology among MSME actors, most of whom still rely on traditional marketing methods, thereby limiting their market reach (Fauziyanti et al., 2023; Rozinah & Meiriki, 2020). Additionally, fluctuations in tourist numbers and issues with MSME product quality also pose sustainability constraints (Badan Pusat Statistik Kabupaten Sidenreng Rappang, 2024). Nevertheless, digitalization offers significant opportunities for MSMEs to expand market share and enhance competitiveness through the utilization of information and communication technology to reach a wider consumer base (Febriyantoro & Arisandi, 2018; Lestari & W., 2022; Sifwah et al., 2024). Research indicates that digital platforms can increase sales and optimize business operations (Tapela et al., 2023; Sovitriana et al., 2024; Pattisahusiwa et al., 2024). The role of government and related institutions in providing technology training and mentorship is crucial to enhance MSME capabilities, enabling them to optimally leverage these digital opportunities (Septiani et al., 2020).

This research has three main, closely related objectives. First, we aim to gain a deep understanding of the

challenges, opportunities, and direct impact of digital technology development on the business management of Micro, Small, and Medium Enterprises (MSMEs) in the tourism sector, specifically in the Wind Farm Tourism (PLTB) area of Sidenreng Rappang Regency. Second, this study aims to explore the experiences and perceptions of MSME actors regarding the adoption and implementation of digital technology in their tourism business operations. Finally, through these findings, we hope to provide deeper insights into technology-based MSME management and offer useful recommendations for the sustainable and competitive development of MSMEs in the tourism sector.

Method

This research employs a qualitative approach to deeply explore the experiences and perceptions of Micro, Small, and Medium Enterprise (MSME) actors regarding the development of digital technology and its impact on their business management in the tourism sector. This approach was chosen because it allows for a comprehensive understanding of complex phenomena from the unique perspectives of participants, focusing on the "why" and "how" behind their experiences. Primary data was collected through two main methods: in-depth interviews and Focus Group Discussions (FGDs).

In-depth interviews were conducted with 12 MSME actors located in the Wind Power Plant (PLTB) tourism area in Sidenreng Rappang Regency, South Sulawesi. Participants were purposively selected to ensure a diversity of business types (e.g., culinary, handicrafts, accommodation services) and initial levels of interaction with digital technology. These interviews aimed to gather detailed information about their personal experiences, challenges faced, opportunities leveraged, and the direct impact of digital technology on their businesses. Interviewers were trained to use semi-structured interview guides, with an average interview duration of 60-90 minutes. All interviews were audio-recorded verbatim and then transcribed for analysis. The interview process ceased upon reaching data saturation, where no new themes emerged from additional interviews.

Complementing the interviews, three Focus Group Discussions (FGDs) were facilitated, each involving 7 to 9 participants, totaling 23 FGD participants. FGD groups were formed based on different types of MSMEs to facilitate more homogeneous and in-depth discussions. FGDs encouraged interactive discussions, allowing for the exploration of collective perspectives and the identification of common themes arising from their interactions with digital technology. Each FGD lasted approximately 90-120 minutes and was facilitated by a trained moderator to manage group dynamics and ensure all participants had the opportunity to contribute. FGD audio recordings were also transcribed verbatim.

Data analysis was conducted thematically following the stages proposed by Braun and Clarke (2006). This process included data familiarization through repeated readings of transcripts, initial coding, searching for broader themes, reviewing and refining themes, and finally defining and naming themes. To ensure the credibility (trustworthiness) of the findings, this research applied data triangulation by comparing information obtained from in-depth interviews and FGDs. Additionally, rich contextual descriptions were presented to

enhance the transferability of the findings. Participant confidentiality was guaranteed by using pseudonyms or anonymous identities in the data presentation.

Ethical Considerations

This research received ethical approval from the Research Ethics Committee of Hasanuddin University. All research procedures were conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and institutional ethical guidelines. Prior to participation, all MSME actors were provided with a comprehensive explanation of the research objectives, procedures, potential risks, and benefits, as well as their right to withdraw at any time. Written informed consent was obtained from each participant.

Results

Level of Adoption and Utilization Patterns of Digital Technology by MSMEs

This study found that the level of digital technology adoption among Micro, Small, and Medium Enterprises (MSMEs) around the Wind Farm Tourism (PLTB) in Sidenreng Rappang Regency is still in an embryonic phase, characterized by a dominant use of basic communication features. Of the 30 participating MSMEs, approximately 75% consistently use instant messaging applications like WhatsApp as their primary means of direct communication with customers, mainly for receiving simple orders or providing product information. This usage tends to be reactive, responding to customer inquiries rather than being proactive in marketing. Additionally, 60% of MSMEs have accounts on social media platforms such as Facebook or Instagram, but their utilization is largely limited to uploading product photos or basic information without a planned content strategy. As one handmade craft MSME owner revealed, "I post photos of finished goods, sometimes people ask in the comments, but I don't know how to make my posts seen by many people." This indicates that social media functions more as a passive digital gallery than a dynamic marketing tool.

In-depth observations and interviews revealed that the understanding of the potential of online marketplaces (such as Tokopedia, Shopee) or online reservation systems (e.g., Traveloka, Booking.com for accommodation) is very minimal, almost non-existent among the majority of MSMEs. Only one out of 30 MSMEs, which sells local souvenirs, had ever attempted to register its products on a local marketplace but encountered difficulties in the registration process, inventory management, and understanding shipping logistics. "It was so hard to arrange the photos, and I also didn't know how to ship if it was far away. In the end, it didn't work out," said the MSME actor. This limitation indicates that the digital ecosystem for product sales has not been internalized and widely understood by local MSMEs, limiting their ability to reach a wider market beyond the physical area of the PLTB.

Fundamental Challenges in Digital Technology Adoption

Although the potential for development through digitalization is generally recognized, MSMEs in the research

area face several fundamental challenges that hinder the optimal and sustainable adoption and utilization of digital technology. The most dominant challenge is the limited knowledge and basic digital skills among MSME actors, most of whom belong to a generation less exposed to advanced technology. Approximately 80% of respondents admitted difficulties in operating complex features on smartphones or computers, creating attractive visual content, understanding social media algorithms, or even managing e-wallet accounts. "We are old, it's very hard to learn new things like this. Just using WhatsApp is already a blessing," said an elderly owner of a small coffee stall. This phenomenon is exacerbated by the lack of continuous training or mentorship tailored to their level of digital literacy.

Furthermore, the absence of specific and identifiable characteristic products or icons representing Wind Farm Tourism (PLTB) is a significant obstacle. Local communities and MSMEs generally lack product innovations (whether food, handicrafts, or souvenirs) that uniquely represent PLTB as a tourist attraction. This reduces MSMEs' motivation to invest in digital marketing, as existing products are still generic and lack strong digital market appeal. "We sell ordinary traditional snacks, what else is there to promote online?" asked a snack vendor, highlighting the lack of product differentiation.

In addition, uneven and unstable internet infrastructure access in some locations, especially in more remote villages around the PLTB, is a crucial technical barrier. Some MSMEs reported difficulties uploading photos or videos due to weak signals, or even connection interruptions during online transactions. "If the signal is bad, how can I upload product photos? Sometimes buyers also get impatient," complained an accommodation owner. Finally, financial constraints also play a significant role; the initial investment for hardware (adequate smartphones, laptops), data package costs, or software subscription fees (if any) are considered burdensome for MSMEs with very limited business scales. Concerns about personal data security and customer privacy in the digital space were also identified as inhibiting factors, although their understanding of these risks still needs to be improved through proper education.

Transformational Opportunities Created by Digital Technology

Despite facing various challenges, digital technology opens up immense transformational opportunities for the development of tourism MSMEs in the PLTB area, although this potential has not yet been fully utilized. MSME actors consistently reported that the use of social media, although simple, has enabled a significant expansion of market reach that was previously very limited to physical tourists who visited the location directly. They can now reach potential customers from major cities in Indonesia (e.g., Makassar, Jakarta), and some have even received inquiries from international tourists interested in this unique destination. One MSME providing homestay services, which actively posts on Facebook and Instagram, reported a 20% increase in reservations from outside South Sulawesi in the last six months.

Although marketplace adoption is still very low, there is a collective awareness of the great potential for receiving online orders and reservations that can significantly increase sales volume and transaction

convenience. This potential can be realized with support from training and more user-friendly platforms. Furthermore, positive reviews and testimonials from satisfied tourists on digital platforms (e.g., Google Maps, social media reviews) serve as highly effective and credible promotional tools. These reviews create a digital word-of-mouth effect, attracting new customers with minimal marketing costs. For instance, a coffee shop near the PLTB experienced an increase in visitors after several local influencers posted positive reviews on Instagram.

Most crucially, digital technology offers unlimited opportunities to develop and market distinctive products or tourism icons of the PLTB that have not yet been fully explored. With guidance and innovation, MSMEs can create unique souvenirs (e.g., miniature wind turbines, local food with attractive PLTB-themed packaging) that can be widely promoted through digital platforms. This will help introduce local uniqueness to a much broader market, while also providing a strong product identity. Digitalization can be a bridge for these products to be recognized in national and international markets.

Impact of Digital Technology on MSME Business Management

Overall, the implementation of digital technology, although still in its early stages and limited to basic platforms, has had a tangible positive impact on the business management of MSMEs in the research area. MSMEs that are more proactive in using social media and WhatsApp show a noticeable increase in operational efficiency, especially in terms of product information dissemination, initial communication with customers, and managing simple orders. This efficiency directly contributes to an initial increase in competitiveness, enabling them to start competing in a wider market and attract a larger segment of tourists, although not yet as complex as MSMEs in urban areas.

However, MSME managers admit that the utilization of technology for digital financial record-keeping, business data analysis for strategic decision-making, or the development of digital product/service innovations still requires further development. This is compounded by the immaturity of distinctive local iconic products that can be massively digitized. Nevertheless, there is a collective awareness and great hope among MSME actors that digital technology, while still feeling unfamiliar and full of challenges, is an essential key to their business sustainability and growth amidst an ever-changing and increasingly competitive tourism landscape. With appropriate support in digital skills training and iconic product development, digitalization has the potential to significantly uplift the local economy around the PLTB.

Discussion

Interpretation of Findings Regarding Digital Technology Adoption Levels and Utilization

The research results indicate that Micro, Small, and Medium Enterprises (MSMEs) in the Wind Farm Tourism (PLTB) area of Sidenreng Rappang Regency adopt digital technology gradually and limitedly, with a dominant use of instant messaging applications and basic social media. This trend suggests that MSMEs are in the early

stages of the digital adoption curve. The utilization of WhatsApp and social media like Facebook and Instagram is more often as passive communication tools and simple product galleries, rather than interactive marketing platforms or comprehensive e-commerce transaction tools. The minimal knowledge and use of online marketplaces serve as strong evidence of this very basic adoption pattern. MSMEs tend to choose tools they perceive as easiest to use and having immediate perceived usefulness for daily communication, consistent with their limited digital skills.

This adoption pattern aligns with the principles of Rogers' Diffusion of Innovation (DOI) Theory, which emphasizes factors such as complexity and trialability as key determinants of innovation adoption (Triandini et al., 2024; Avi & Hassan, 2021). In the context of PLTB Sidrap, MSMEs tend to adopt technologies with low complexity that are easy to try out without significant risk, such as WhatsApp or simply posting photos on social media. This "trialability" aspect is very significant in the MSME context because it allows them to become familiar with technology without large investments or deep technical understanding (Triandini et al., 2024). However, they have not yet reached a stage where they see significant relative advantages from more complex platforms like marketplaces due to limited understanding and the absence of iconic products.

Furthermore, these findings also resonate with studies in other rural and developing regions. For instance, in rural India, the Digital India program showed a significant shift in adoption towards mobile-based services over computers, emphasizing the importance of more accessible mobile connectivity for digital inclusion (Sindakis & Showkat, 2024). Similarly, in Bali, MSMEs also face digital transformation barriers such as a lack of skills and infrastructure, although social networks remain widely used for marketing (Lei et al., 2023). This reinforces the view that MSMEs in tourist areas often see information and communication technology (ICT) primarily as simple promotional tools, not for comprehensive business processes like e-commerce or training (Ashari et al., 2014). The Technology-Organization-Environment (TOE) framework is also relevant, highlighting that factors such as perceived cost and competitive pressure influence adoption. In the case of PLTB Sidrap, the perceived costs of marketplaces (both financial and cognitive costs of learning) may be too high, and the competitive pressure to "go digital" has not been as urgent compared to basic operational needs.

This gradual and limited adoption pattern has significant implications for the development potential of MSMEs in the PLTB Sidrap Tourism area. First, MSMEs' market reach remains suboptimal. Although social media provides some expansion, without a presence on broader marketplaces or e-commerce platforms, MSMEs lose opportunities to reach larger market segments, both domestic and international. This limits sales volume and potential revenue growth. Second, operational efficiency is not yet maximized. While WhatsApp aids communication, the lack of digital systems for inventory management, structured ordering, or sales analysis means MSMEs still rely on manual methods prone to errors and inefficiency. Third, MSME competitiveness is low. Amidst an increasingly digital tourism landscape, MSMEs that do not fully utilize technology will fall behind more adaptive competitors. These limitations hinder their ability to attract modern tourists who increasingly rely on digital information and transactions in their travel planning.

Critical Analysis of MSME Digitalization Challenges

The digitalization of Micro, Small, and Medium Enterprises (MSMEs) in the Wind Farm Tourism (PLTB) area of Sidenreng Rappang faces significant challenges, particularly because they are located in rural areas vulnerable to broader digital divide issues. This divide reflects disparities in internet access, financial resources, and digital skills (Brandano et al., 2023). These challenges are exacerbated by infrastructure deficiencies and limited access to affordable high-speed internet, which are crucial for effective digital engagement.

1. Digital Literacy and Skill Gaps

The lack of digital knowledge and skills among MSME actors is a major barrier to technology adoption. Research findings show that the majority of MSMEs struggle to operate complex features or understand basic online marketing metrics. This phenomenon is a manifestation of the broader digital divide, where rural and remote areas like PLTB Sidrap have lower access to and capability in utilizing digital technology (Karimov & Khujanazarova, n.d.; C & R, 2018). Low digital literacy hinders MSMEs' ability to effectively leverage digital tools, even when training programs exist, which are often inadequate or unsustainable (Riyanto et al., 2024; Rujitoningtyas et al., 2025). The shortage of skilled labor capable of navigating digital technology further exacerbates this gap, limiting MSMEs' ability to compete in the digital economy (Kang, 2024; Sheik, 2023). Another study in Bali also found that MSMEs face digital transformation barriers due to a lack of skills and digital infrastructure, although they still utilize social networks for marketing (Lei et al., 2023), similar to the pattern in PLTB Sidrap.

2. Limited Iconic Products and Differentiation

The absence of specific characteristic or iconic PLTB products is a significant impediment to more proactive digital adoption. Because the community generally has not developed products that can be strongly identified with the PLTB tourist object itself (e.g., miniature wind turbines with distinctive designs, local food with PLTB-themed packaging), MSMEs feel they lack "what" to market aggressively digitally. The importance of product identity in tourism digital marketing is crucial; unique products with a story are more likely to attract attention in a competitive digital space. Without strong iconic products, MSMEs' digital marketing efforts become less effective and lack the distinct appeal that differentiates them from other generic products. In comparison, many other successful tourist destinations in Indonesia and globally promote their MSMEs digitally because they have strong, easily visually marketable souvenir products or distinctive experiences on social media.

3. Infrastructure and Financial Problems

Unstable and inadequate internet access is a crucial infrastructure challenge in the research area. The lack of affordable high-speed internet in rural areas is a significant barrier to digital economic participation (Grimes, 2023; Brandano et al., 2023). This directly affects MSMEs' ability to upload high-quality content, conduct seamless online transactions, or utilize cloud computing for operations. Moreover, financial constraints also hinder MSMEs' investment in digital technology. MSMEs in remote areas often lack the financial resources needed to invest in digital technology, including purchasing adequate hardware or software

subscription fees (Kang, 2024). The high costs associated with digital transformation, including staff training, pose significant challenges, especially in less economically developed regions (Sheik, 2023). This makes it difficult for MSMEs to adopt and integrate digital tools into their operations, exacerbating the digital divide.

4. Data Security Concerns

Analysis shows that privacy and data security concerns influence MSMEs' willingness to transact or share information online. Although their understanding of cyber risks may not be profound, the presence of doubts and distrust towards digital platforms (especially lesser-known ones) acts as a barrier. MSMEs are reluctant to take risks that could harm their reputation or finances, tending to avoid platforms they perceive as insecure or overly complex in terms of data management. This indicates the need for more intensive education on basic cybersecurity practices and the benefits of using trusted digital platforms.

Exploring Digital Opportunities in MSME Tourism Development

Despite facing various challenges, digital technology opens up immense transformational opportunities for the development of Micro, Small, and Medium Enterprises (MSMEs) in the Wind Farm Tourism (PLTB) area of Sidenreng Rappang, although this potential has not yet been fully utilized. These opportunities align with fundamental changes in tourism models driven by digitalization and the concept of the sharing economy.

The research findings consistently show that the use of social media, even at a basic level, has proven effective in expanding the market reach of MSMEs that was previously very limited to physical tourists visiting the location directly. MSME actors reported the ability to reach potential customers from major cities in Indonesia, and even receive inquiries from international tourists interested in this unique destination. This phenomenon aligns with the concept of digital tourism, which utilizes digital platforms to facilitate the offering and consumption of tourism services (Klimova et al., 2019). Social media, even when used only as a gallery or information board, has served as an initial bridge for MSMEs to interact with a wider market, transcending their geographical boundaries.

The potential of e-commerce platforms and marketplaces is far greater if the identified adoption barriers can be overcome. These platforms, like Airbnb or ToursByLocals in the global tourism context, represent the core of the sharing economy, where individuals and organizations share resources and services through digital platforms (Nookhao et al., 2024; "Rethinking Tourism Models in the Platfor...", 2022). By integrating MSMEs into relevant marketplaces (both local and national), their products and services can be accessed by millions of potential tourists, exponentially expanding market reach. This will enable MSMEs in PLTB Sidrap to not only attract tourists seeking local uniqueness but also to participate in larger market dynamics, offering more personalized and flexible travel experiences (Ikumoro et al., 2020). Practical training and continuous support emphasizing perceived usefulness and ease of use will be crucial to increase MSME engagement on these platforms, as shown in related studies (Nookhao et al., 2024; Sugandini et al., 2019).

The study found that positive reviews and testimonials from satisfied tourists on digital platforms (e.g., Google Maps, social media reviews) serve as highly effective and credible promotional tools for MSMEs. These reviews create a digital word-of-mouth effect, attracting new customers with minimal marketing costs. The role of these reviews is highly relevant to the Theory of Online Consumer Trust, which states that online consumer reviews play a vital role in shaping consumer trust by reducing uncertainty about products and services (Lee & Ma, 2012; Guoqing et al., n.d.; Ou et al., 2024).

The perceived credibility of these reviews, influenced by trust in the source and ease of information use, significantly impacts consumer trust in online offerings (Guoqing et al., n.d.). In the context of MSMEs in PLTB Sidrap, positive reviews from visitors who have experienced it firsthand not only serve as social validation but also build initial trust for prospective tourists. Trust is a fundamental element in online purchase decisions, and positive reviews can mitigate the perceived risk consumers face when interacting with unfamiliar service providers (Sahu et al., 2024; Daoudi & Elgraini, 2021). Thus, encouraging tourists to provide reviews and actively managing online reputation becomes a low-cost yet very powerful marketing strategy for MSMEs in this area.

Most crucially, digital technology offers unlimited potential to develop and market distinctive products or tourism icons of the PLTB that have not yet been fully explored. Although MSMEs currently lack specific iconic products, digitalization can be a catalyst for product innovation and marketing the PLTB's tourism identity. Through digital platforms, MSMEs can showcase the story behind their local products, cultural uniqueness, or authentic manufacturing processes. For example, an agrotourism site in Pematang Gajah Village successfully used virtual tours to promote local products despite infrastructure challenges (Suniyyah et al., 2024).

Digitalization can spark local creativity in creating "sellable" products online, such as miniature wind turbines, handicrafts with PLTB motifs, or local food packaging reflecting the location's identity. With attractive visualizations on social media or marketplaces, these products become not just souvenirs but also narrators of the PLTB tourism experience itself. The argument is that digitalization provides platforms and tools to build brand awareness and product differentiation. This allows MSMEs to narrate the uniqueness of their location and products to a much wider audience, transforming ordinary products into sought-after icons, and ultimately, significantly contributing to local economic growth and sustainable tourism (Santoso et al., 2023).

Implications of Digital Technology's Impact on MSME Business Management

Although the adoption of digital technology among PLTB Sidrap MSMEs is still in its early stages and tends to be limited to basic platforms, this implementation has had a significant impact on business management, albeit not yet reaching its full potential.

Digitalization, even minimal, has contributed to increased operational efficiency for MSMEs, especially in

terms of simple communication and marketing. The use of WhatsApp and social media for direct customer interaction has streamlined initial ordering processes, responses to inquiries, and product information dissemination. This reduces the time spent on manual communication and allows MSMEs to manage customer interactions more organizedly. This efficiency increase, though simple, directly impacts an initial increase in competitiveness. MSMEs active on social media are more easily found by potential tourists, which in turn increases visibility and sales opportunities compared to MSMEs that do not use digital platforms at all. This is a crucial first step towards a larger business transformation, as it provides a positive initial experience for MSMEs with technology and demonstrates its concrete benefits, which can spark a desire for further adoption.

Despite the increase in operational efficiency, this research highlights a significant gap in digital utilization for strategic purposes. MSMEs in PLTB Sidrap generally have not utilized digital technology for financial record-keeping, sales or customer data analysis, or data-driven business decision-making. Manual or traditional systems still dominate these aspects. This gap is crucial for the long-term growth of MSMEs. Without accurate financial records and adequate data analysis, MSMEs struggle to objectively evaluate business performance, identify market trends, manage cash flow, or plan investments. The ability to make better and faster decisions, based on relevant data, is hindered. This also limits their potential to gain access to capital from financial institutions that often require digitized and transparent financial reports.

Regardless of the existing challenges and gaps, another important finding is the high awareness among MSMEs of the urgency of digitalization for their business sustainability. MSME actors recognize that in the current era, digitalization is no longer an option, but a necessity to remain relevant and competitive in the tourism sector. They see how other, more digitalized MSMEs are able to reach wider markets and adapt faster. This awareness is a valuable social capital and has positive implications for future empowerment programs. It indicates that MSMEs have an internal motivation to change, which is a primary prerequisite for the success of training and mentorship programs. Stakeholders can build upon this awareness by providing tailored, practical, and sustainable programs that can bridge knowledge and skill gaps and overcome infrastructure and financial barriers.

Theoretical and Managerial Implications

The findings of this study enrich the understanding of digital technology adoption in the unique context of rural tourism MSMEs, such as around PLTB Sidrap. First, it re-emphasizes the relevance of Diffusion of Innovation (Rogers) Theory, particularly in how innovation complexity and initial trialability influence gradual adoption patterns in environments with limited digital literacy. MSMEs tend to choose the simplest and lowest-risk innovations first. Second, this study places new emphasis on environmental contextual factors, such as internet infrastructure availability and the existence of iconic products, as essential prerequisites for more advanced technology adoption. This complements adoption models like the Technology Acceptance Model (TAM) or the Unified Theory of Acceptance and Use of Technology (UTAUT), which typically focus more on internal user factors (perceived usefulness and ease of use). These findings suggest that in remote areas, external factors

(infrastructure, supporting products) may be equally, if not more, important than initial internal perceptions in driving sustainable digital adoption. This contribution enriches the literature on sustainable tourism development by highlighting the role of MSMEs and digitalization in this specific context.

The results of this research provide several concrete recommendations for stakeholders to support the digitalization of MSMEs in the PLTB Sidrap area and similar regions:

1. Digital Infrastructure Development

- Prioritize the expansion and improvement of stable and affordable internet access quality throughout the tourism area, including supporting villages.
- Tailored Digital Training Programs

Design highly practical digital literacy training programs, using easy-to-understand language, and tailored to the basic skill levels of MSMEs. Focus on basic social media use for marketing, introduction to simple marketplaces, and fundamentals of digital security. Training should be continuous with direct on-site mentoring.

- Iconic Product Incubation

Initiate incubation programs or workshops to help MSMEs develop distinctive/iconic products that specifically represent Wind Farm Tourism (e.g., miniature wind turbine souvenirs, local food with PLTB branding). This will provide "what" to market digitally effectively.

2. For MSME Support Institutions (e.g., Universities, Business Communities):

- Holistic Mentoring

Provide mentoring programs that not only focus on technology but also cover aspects of digital financial management, content marketing strategies, and product innovation based on local potential.

- Simple Digitalization Platforms

Develop or introduce highly user-friendly and specific digital platforms for MSMEs in rural areas, possibly in collaboration with technology startups.

- Facilitate Access to Capital

Help MSMEs access microfinance schemes or grants that can be used for initial investments in digital technology.

3. For MSME Actors

- Start Simple

Focus on optimizing the use of already familiar digital platforms (WhatsApp, social media) before transitioning to more complex ones. Maximize existing features.

- Collaboration

Form MSME groups to share knowledge, experience, and even collaborate on digital marketing or iconic product development.

- Be Open to Training

Actively participate in every training or mentoring offered by the government or other institutions to gradually

improve digital skills.

- Focus on Product Quality and Identity

Alongside digitalization, continuously improve product quality and start thinking about creating products with a strong, unique identity as a hallmark of Wind Farm Tourism.

Conclusion

This research extensively examines the impact of digital technology development on Micro, Small, and Medium Enterprises (MSMEs) in the Wind Farm Tourism (PLTB) area of Sidenreng Rappang Regency. The findings indicate that despite a high awareness of the urgency of digitalization, the level of technology adoption by MSMEs is still in its early stages, dominated by the use of in stant messaging applications and basic social media for simple communication and promotion. The utilization of online marketplaces or more complex platforms remains very limited.

Various fundamental challenges hinder MSME digitalization in this region, primarily a deep digital literacy and skills gap among business actors. Furthermore, the absence of identified PLTB-specific products or icons that serve as souvenirs or digital tourism attractions, along with limitations in internet infrastructure and financial capital, pose significant barriers. Concerns about data security also influence MSMEs' willingness to conduct online transactions.

Nevertheless, digitalization has opened up transformational opportunities for MSMEs. Digital technology, even at a basic level, has proven effective in expanding market reach previously limited to physical tourists, and enhancing credibility through online reviews that act as digital word-of-mouth marketing. Moreover, there is significant potential to develop iconic digital products that can strengthen PLTB's tourism identity and open up wider markets.

The implications of this study highlight that while digitalization brings initial improvements in operational efficiency and competitiveness, there are still gaps in strategic utilization for financial record-keeping or data analysis. Therefore, managerial recommendations are crucial, including tailored and continuous digital training programs, internet infrastructure development, and the initiation of iconic product incubation programs specifically representing PLTB. Theoretically, this research enriches the understanding of technology adoption in the context of rural tourism MSMEs, emphasizing the vital role of contextual factors such as infrastructure and the availability of distinctive products. With appropriate support, MSMEs in the PLTB Sidrap area have great potential to digitally transform and contribute more significantly to sustainable tourism and the local economy.

Declaration of Conflicting Interests

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Developing and Validating a Historical Thinking Skills Assessment Instrument: A Psychometric Study Using Classical Test Theory and Item Response Theory

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Abstract: The gap between history learning objectives that emphasize historical thinking skills and assessment practices that still focus on memorizing facts is a major challenge in history education. This study aims to develop and validate a competency-based assessment instrument to measure historical thinking skills holistically at the high school level. The instrument is constructed based on four main domains: source evaluation and interpretation, causal reasoning, continuity and change, and ethical reflection and perspective taking. Through a Research and Development (R&D) approach, validity testing was conducted using Aiken's V analysis on 16 items, while empirical testing involved 134 students and was analyzed using Classical Test Theory (CTT) and Item Response Theory (IRT), specifically the Graded Response Model (GRM). The results show that the instrument has high content validity (Aiken's V = 0.85–1.00), strong internal reliability (α = 0.804), adequate discriminatory power ($r \geq 0.30$), and the best model fit on the GRM. The test's information function and conditional reliability indicate that the instrument is most effective for measuring students' abilities at moderate to low levels (θ = -1 to 0). The study concludes that the instrument meets solid psychometric criteria and is

relevant for use in the context of competency-based formative and summative assessments within the Independent Curriculum.

Keywords: Historical Thinking, Graded Response Model (GRM), Assessment Instrument, Theory Item Response Retrieval (IRT), Classical Test Theory

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Introduction

Contemporary history education globally has shifted towards strengthening historical thinking skills (historical thinking skills), which includes source evaluation, causal reasoning, and understanding change from multiple perspectives (Hera et al., 2022; Ofianto, Rahmi, et al., 2024; Van Boxtel et al., 2020). These skills are considered essential 21st-century competencies, equipping students to navigate the complexity of information and narratives in the modern world (Claravall et al., 2024; Ofianto, Aman, Sariyatun, Bunari, et al., 2022). This pedagogical consensus emphasizes that the primary goal of history learning is no longer simply memorizing facts, but rather the ability to "do" history—analyzing evidence and constructing credible arguments (Smith et al., 2019; Thorp & Persson, 2020).

However, there is a significant gap between this ideal pedagogical goal and assessment practices in the field. Most existing assessment instruments, including large-scale tests, are still heavily focused on factual recall (factual recall) and fail to measure the complex cognitive dimensions of historical thinking (Ercikan & Seixas, 2015; Ofianto & Suhartono, 2015). Consequently, there is a critical lack of standardized, valid, and reliable assessment tools to authentically evaluate whether students have truly developed core historical competencies. This gap not only hinders effective learning evaluation but also indirectly perpetuates shallow teaching practices (Bunari et al., 2023; López-García & Miralles-Martínez, 2024b; Van Boxtel et al., 2020; Wallace-Casey, 2024).

Numerous studies have attempted to address this gap, often with limited focus or incomplete methodology. Some recent studies have successfully developed instruments to measure individual domains of historical thinking. For example, Ofianto and Ningsih (2021) developed an instrument for chronological thinking skills using the Rasch Model, and Ofianto et al. (2022) designed a specific assessment to test causality analysis. While important, these single-domain approaches tend to provide a fragmented picture of students' historical thinking abilities. On the other hand, efforts to develop more holistic assessments through project-based approaches or digital platforms like Padlet (Ofianto, Rahmi, et al., 2024) offer rich formative methods but face challenges in standardization and scalability for objective summative evaluation.

Even more established international instruments such as Assessment of Historical Analysis and Argumentation The AHAA (Analytical Assessment) by Reisman et al. (2019), which is a reference in document-based assessment, has not explicitly integrated the ethical reflection dimension as one of its main components. Thus, despite progress, there is still a clear research gap for an instrument that is able to: (1) measure multiple complex cognitive domains in an integrated, rather than fragmented, manner; (2) be designed as a reliable, standardized measurement tool for summative assessment; and (3) explicitly include the increasingly crucial ethical reflection dimension.

Addressing these limitations, our study developed and validated an assessment instrument explicitly designed to address this gap. The novelty of this study lies in synthesizing three key strengths. First, unlike single-domain approaches (Ofianto & Ningsih, 2021a; Ofianto et al., 2022), our instrument integrates three complex cognitive domains: source evaluation, causal reasoning, and ethical reflection. Second, going beyond formative approaches (Ofianto, Rahmi, et al., 2024), this instrument was designed as a standardized and validated measure using a rigorous combination ofClassical Test Theory (CTT) and Item Response Theory(IRT) to ensure objectivity and high psychometric quality. Third, by explicitly incorporating ethical dimensions, this study extends and complements existing document-based assessment models such as the AHAA (Reisman et al., 2019).

The need for such instruments is particularly pressing under education reform, such as in Indonesia. The implementation of the Independent Curriculum, which emphasizes critical thinking, has created momentum for change, yet teachers in the field are not yet equipped with adequate measurement tools to assess these skills (Ibrahim et al., 2024; Rosanawati et al., 2025). Therefore, this research not only contributes to the global literature but also provides concrete and contextually relevant solutions to support the success of history education reform in Indonesia.

Thus, this article presents a systematic instrument development process, from conceptual construction to empirical analysis. We report the results of content validity (Aiken's V), internal reliability (Cronbach's Alpha), and in-depth item analysis of CTT and IRT. Our primary contribution is to provide educators and researchers with a psychometrically tested and ready-to-use instrument to measure what really matters (what matters) in history education, which can ultimately bridge the gap between curriculum objectives and assessment practices in the classroom.

Methods

This study applies a research and development(R&D) focused on the development and validation of historical thinking skills assessment instruments. These instruments are designed to measure four fundamental domains: (1) source evaluation and interpretation, (2) causal analysis, (3) identification of continuity and change, and (4) ethical reflection and historical perspective-taking. The development process was carried out through a series of systematic stages, starting from the formulation of theoretical constructs, the preparation of indicator-based test

items, content validation by experts, field trials, and quantitative psychometric analysis using Classical Test Theory (Classical Test Theory- CTT) and Item Response Theory (Item Response Theory - IRT).

The participants in this study were 134 eleventh-grade students from several senior high schools (SMA) in Kerinci Regency, Jambi Province, who had studied Indonesian History. Sampling was conducted using a random sampling technique. Purposive sampling: The primary criterion is that students have received material relevant to the instrument's content, including colonialism, the national movement, the proclamation of independence, and the dynamics of Indonesian democracy. This criterion was established to ensure participants had sufficient prerequisite knowledge to respond to the developed test items.

Instrument development began with an in-depth theoretical review of the concept of historical thinking proposed by leading scholars, including Wineburg, Seixas & Morton, Lévesque, Barton & Levstik, VanSledright, and Chapman. From this literature synthesis, four main domains were formulated, which served as the conceptual framework for the measurement. Each domain was further subdivided into a series of measurable indicators and sub-indicators, which formed the basis for the development of 16 test items. Polytomous(graded multiple choice). Each question is designed with five answer options that represent levels of reasoning, ranging from the weakest argument (scored 1) to the strongest (scored 5). To encourage critical and contextual analysis, the question stimuli utilize authentic historical sources, such as primary documents, archival citations, maps, and tables.

The validity of the instrument content was tested through assessment by five experts (expert judgment) consisting of history education lecturers, curriculum experts, and assessment specialists. Each expert was asked to evaluate the suitability of the test items to the historical thinking skill indicators using a five-point rating scale. The assessment data were analyzed using Aiken's V coefficient to measure the level of inter-rater agreement. The analysis results showed that all items obtained Aiken's V values in the range of 0.85 to 1.00, confirming that all items were substantially valid and representative of the constructs being measured.

Field test data were then analyzed using two psychometric approaches. First, the Classical Test Theory (CTT) analysis included reliability testing, item-total score correlation, and difficulty index. The reliability test yielded a Cronbach's Alpha coefficient of 0.804, which is considered high. Discriminant power analysis showed that 14 of the 16 items had item-total correlations above the threshold of 0.30, while two other items were recommended for revision. In terms of difficulty level, 14 items were classified as 'moderate' (index 0.30–0.70) and two items were classified as 'difficult' (index <0.30), indicating a balanced distribution of difficulty.

To obtain a deeper understanding of the psychometric characteristics of the items, the analysis continued using Item Response Theory(IRT). A comparison of three IRT models was conducted polytomous: Partial Credit Model (PCM), Generalized Partial Credit Model (GPCM), and Graded Response Model(GRM). Based on the model fit criteria (AIC, BIC, and log-likelihood), GRM proved to be the model that best fit the data. Analysis of item parameters with GRM showed that most items had discriminatory power (parameters a) at moderate to

high levels, with a distribution of category thresholds (parameters b) logical. The item fit test ($S\text{-}X^2$) confirmed that 10 of the 16 items fit the model, and analysis of the response options indicated effective distractor function with low guess rates.

All statistical analyses were performed using SPSS software for CTT, Microsoft Excel for Aiken's V calculations, and R (a software package).to die) and IRTPRO for IRT analysis. This combinational approach ensures that the resulting instrument is not only valid and reliable, but also sensitive to variations in the level of historical thinking competency of students at the high school level.

Results

Instrument Development and Structure

The historical thinking skills assessment instrument was developed based on a synthesis of theoretical frameworks and definitions formulated by leading experts in history education, such as (Carretero & Gartner, 2024; Lévesque & Clark, 2018; Seixas & Morton, 2013; Smith et al., 2019; VanSledright, 2015). These experts emphasize that historical thinking is not just a single cognitive ability, but rather a complex combination of disciplinary knowledge, critical reasoning, source evaluation, contextual understanding, and ethical reflection.

Smith et al. (2019) describe historical thinking as the ability to critically evaluate historical sources, understand their context, and construct arguments based on evidence. Seixas and Morton (2013) identify six key concepts in historical thinking: historical significance, use of evidence, continuity and change, cause and effect, historical perspective, and the ethical dimension of history. Lévesque and Clark (2018) emphasize the importance of linking the past and present through the analysis of patterns of continuity. Meanwhile, VanSledright (2015) highlights the importance of constructing a coherent historical narrative through critical analysis of sources. Levstik and Barton (2022) emphasize the socio-political relevance of historical interpretation and the importance of connecting historical developments to contemporary issues. All of these theoretical contributions are used to formulate an operational definition of historical thinking suitable for classroom assessment purposes. Based on this synthesis, historical thinking skills are conceptualized into four measurable domains:

- evaluate and interpret historical sources
- identifying continuity and change
- analyze causes and effects in historical events
- connecting the past with the present through ethical reflection and perspective taking.

Each domain is translated into observable indicators and used as a reference in developing test items. This is done so that the instrument not only reflects cognitive engagement with historical content but also captures the reasoning patterns typical of the discipline of history.

The final instrument consisted of 16 graded multiple-choice questions, each with five answer options

representing different levels of reasoning quality. This format was chosen to capture variations in student abilities more subtly, rather than simply being right or wrong, in accordance with the principles of competency-based assessment and the Graded Response Model (GRM) approach. To align with the context of the Indonesian national curriculum, the instrument's content addressed historical themes such as the colonial period, anti-imperialist resistance, the Proclamation of Independence, and the transformation of democracy from the Old Order to the Reformation era. Each question was stimulus-based and document-based, using primary sources, maps, archival citations, historical artifacts, and timelines—to reflect the authentic tasks typically undertaken by historians. Furthermore, each item was reviewed for its alignment with cognitive taxonomy and disciplinary literacy to meet standards for depth of thinking and curriculum relevance. The instrument's outline is presented in Table 1.

Table 1. Historical Thinking Skills Test Question Grid

No.	Historical Thinking Indicator	Sub-Indicators and Learning Objectives	Historical Material/Content	Question No
1	Assessing, Using, Reconstructing, and Interpreting Historical Evidence	1.1. Analyze the validity and reliability of historical sources to identify primary and secondary sources. 1.2. Identifying bias in colonial historical sources. 1.3. Interpreting historical documents in the context of their time and place. 1.4. Using historical evidence to construct a narrative. 1.5. Formulate arguments based on primary and secondary sources. 1.6. Collecting evidence to reconstruct events. 1.7. Drawing conclusions based on evidence and interpretation.	The Arrival of Western Nations and the Beginning of Colonialism	1-7
2	Identifying Continuity and Change	2.1. Describe the pattern of changes in resistance strategies. 2.2. Explain the factors that influence change. 2.3. Linking resistance to the development of nationalism.	Resistance against Colonialism	8-10
3	Analyze Cause and Effect	3.1. Identify the causes of the Proclamation. 3.2. Analyzing the initial impact of independence.	Proclamation of Independence 1945	11-13

No.	Historical Thinking Indicator	Sub-Indicators and Learning Objectives		Historical Material/Content	Question No
		3.3.	Explain the causal relationship with Japan's defeat.		
4	Connecting the Past with the Present	4.1	Comparing democratic systems across time.	Indonesian Democracy: Old Order–Reformation	14-16
		4.2	Evaluating the impact of the Reformation.		
		4.3	Explain the contribution of the Reformation to democratic identity.		

Content Validity

To ensure that each item accurately represents the construct of historical thinking, a content validity analysis was conducted through assessments by five independent experts experienced in historical pedagogy and psychometrics. The experts were given a package containing 16 polytomous items, a competency framework, and an operational definition of the historical thinking domain, and then asked to independently rate them using a 5-point scale based on the item's relevance to the construct. These assessments were analyzed using Aiken's V coefficient, a commonly used psychometric measure for quantitative content validity. Aiken's V values range from 0 to 1, with a threshold of ≥0.80 indicating adequate validity and ≥0.90 reflecting very strong consensus among experts, thus ensuring construct suitability before the instrument is empirically validated. The results of the expert assessments are presented in Table 2.

Table 2.Aiken's V Value for Each Item

Item No.	Aiken's V	Interpretation
S1	0.95	Accepted
S2	0.90	Accepted
S3	1.00	Accepted
S4	0.90	Accepted
S5	0.95	Accepted
S6	0.90	Accepted
S7	0.85	Accepted
S8	0.95	Accepted
S9	0.95	Accepted

Item No.	Aiken's V	Interpretation
S10	0.85	Accepted
S11	0.95	Accepted
S12	0.90	Accepted
S13	0.90	Accepted
S14	1.00	Accepted
S15	0.85	Accepted
S16	0.95	Accepted

The results of the content validity analysis using the Aiken's V coefficient showed that all 16 items had values between 0.85 and 1.00, meaning all items were in the "acceptable" category and indicated a high level of content validity. Items S3 and S14 obtained the highest value (1.00), reflecting full consensus among experts regarding their relevance to the construct being measured. A total of seven items (S1, S5, S8, S9, S11, S14, and S16) had Aiken's V values ≥0.95, indicating very strong suitability, while the other items remained above the minimum threshold of 0.80 indicating adequate validity. These findings indicate that all items have been assessed as relevant and representative of the historical thinking domain, making them worthy of proceeding to the empirical testing stage.

Descriptive Statistics

After the instrument was validated by experts, the next step was a field trial to obtain empirical data and evaluate the performance of the test items in a real-world context. This trial aimed to determine the distribution of student scores, response patterns, and the instrument's readiness for further psychometric analysis. The trial was conducted on 134 eleventh-grade high school students in Kerinci Regency, Jambi Province. School selection was purposive, selecting schools that had implemented the National Curriculum and had Indonesian History as a subject.

All participating students had received material on the history of colonialism, popular resistance, the proclamation of independence, and post-independence political developments. Each student completed 16 multiple-choice questions with five answer options that reflected the quality of their historical reasoning. The trial results are in Table 3 below.

Table 3.Descriptive Statistics of Trial Results

Statistics	Mark
Number of Respondents	134 students
Lowest Total Score	42
Highest Total Score	79

Statistics	Mark
Average Score	60,90
Median Shoes	60,50
Standard Deviation (SD)	10,94

Descriptive data from 134 respondents showed that students' total scores ranged from 42 to 79, with a mean score of 60.90 and a median of 60.50. Nearly identical mean and median values indicate a relatively symmetrical data distribution. The standard deviation of 10.94 indicates moderate variation in scores among students, reflecting differences in their level of mastery of the historical thinking skills measured. The lowest (42) and highest (79) scores demonstrate a wide range of achievement, which can serve as a basis for further analysis of individual and group abilities.

Reliability

Analysis Results with Classical Test Theory (CTT)

To measure the internal consistency of the instrument, the Cronbach's Alpha coefficient was used. The analysis results showed an α value of 0.804, which is included in the high reliability category.

Table 4. Summary of Instrument Reliability

Component	Mark
Number of Grains	16
Number of Respondents	134
Cronbach’s Alpha	0,804
Average Total Score	60,90
Standard Deviation of Score	10,94

The alpha value of 0.804 is above the minimum threshold of 0.70 recommended by Nunnally & Bernstein (1994), thus this instrument can be considered reliable and suitable for use in educational assessment purposes, particularly in measuring students' historical thinking skills at the high school level. Furthermore, the analysis also showed that there was no significant increase in the alpha value when one item was removed. This indicates that all items complement each other and contribute to the overall measurement of the construct.

Item–Total Score Correlation and Discriminating Power

A correlation analysis between the scores on each item and the total score (item-total correlation) was conducted to assess the extent to which each item differentiates between students with high and low historical thinking skills. A high correlation indicates that the item contributes consistently to the overall construct being measured, in this case, historical thinking skills.

Table 5.Item–Total Score Correlation Results and Discriminatory Power

Item No.	Average Score	Item-total Correlation (r_p)	Alpha If Deleted	Categories and Results
S1	3,79	0,464	0,797	Good distinguishing power → Maintained
S2	4,02	0,511	0,793	Good distinguishing power → Maintained
S3	3,91	0,328	0,804	Sufficient → Recommended for minor revisions
S4	3,80	0,222	0,807	Weak → Recommended for revision
S5	4,10	0,456	0,797	Good distinguishing power → Maintained
S6	3,77	0,513	0,795	Good distinguishing power → Maintained
S7	4,03	0,547	0,791	Strong differentiating power → Maintained
S8	4,01	0,546	0,791	Strong differentiating power → Maintained
S9	3,78	0,572	0,789	Very strong distinguishing power → Maintained
S10	3,96	0,556	0,790	Strong differentiating power → Maintained
S11	3,99	0,513	0,793	Good distinguishing power → Maintained
S12	3,65	0,515	0,795	Good distinguishing power → Maintained
S13	3,91	0,505	0,793	Good distinguishing power → Maintained
S14	3,66	0,649	0,782	Very strong → Maintained
S15	3,08	0,390	0,802	Enough → Still worth maintaining
S16	3,44	0,675	0,780	Very strong → Maintained

The results of the analysis using CTT showed that of the 16 items tested, 14 items had a correlation value of $r_p \geq 0.30$, indicating good to very strong discriminatory power. This indicates that most items can effectively differentiate students based on their level of historical thinking ability. One of the items that performed best was Item S16, with the highest correlation value of 0.675, indicating that the item was very effective in differentiating high- and low-ability students. Other items that also had very good discriminatory power included S14 (r_p = 0,649), S9 (r_p= 0.572), and S10 (r_p = 0,556).

However, there are two items that have a low correlation, namely S4 (r_p= 0.222) and S3 (r_p= 0.328). A correlation value below 0.30 indicates that the item is less sensitive in differentiating student abilities. Item S4 in particular requires attention for revision, both in terms of stimulus, answer choices, and wording to be more representative of the construct being measured. Meanwhile, although the correlation value for S3 is still within the tolerable limit, minor revisions are still recommended to increase its contribution to the integrity of the measurement.

Furthermore, the analysis also showed that deleting any one item did not significantly increase the overall reliability value (alpha if item deleted), indicating that all items remained relevant and contributed to the overall consistency of the instrument. Overall, these results reinforce previous findings that the instrument was designed with good item quality, reflects valid indicators of historical thinking, and is able to assess student abilities fairly and proportionally.

Grain Difficulty Index

After analyzing reliability and discriminating power, the next step in evaluating item quality is calculating the difficulty index. The difficulty index measures the proportion of students who answer correctly (or choose the highest-scoring option) on an item. In the context of a polytomous instrument with a five-level scale (1–5), the difficulty index is calculated based on the average score obtained on each item compared to the maximum score. Difficulty indexes range from 0 to 1. The higher the index, the easier the item. Conversely, the lower the value, the harder the item. According to measurement experts such as Nitko & Brookhart (2014), good items generally have a difficulty index between 0.30 and 0.70. Items below 0.30 are considered “difficult,” while items above 0.70 are considered “too easy” and generally less informative for differentiating students based on ability.

Table 6.Historical Thinking Instrument Item Difficulty Index

Item No.	Average Score (out of 5)	Index of Difficulty	Difficulty Category	Decision
S1	3,79	0,410	Currently	Maintained
S2	4,02	0,530	Currently	Maintained
S3	3,91	0,336	Currently	Maintained
S4	3,80	0,127	Difficult	Recommended revision
S5	4,10	0,597	Currently	Maintained
S6	3,77	0,530	Currently	Maintained
S7	4,03	0,657	Currently	Maintained
S8	4,01	0,552	Currently	Maintained
S9	3,78	0,470	Currently	Maintained
S10	3,96	0,597	Currently	Maintained
S11	3,99	0,575	Currently	Maintained

Item No.	Average Score (out of 5)	Index of Difficulty	Difficulty Category	Decision
S12	3,65	0,530	Currently	Maintained
S13	3,91	0,425	Currently	Maintained
S14	3,66	0,493	Currently	Maintained
S15	3,08	0,216	Difficult	Recommended revision
S16	3,44	0,313	Currently	Maintained

The analysis results showed that 14 of the 16 items (87.5%) had a difficulty index in the moderate category, ranging from 0.30 to 0.70. This indicates that most items had a balanced level of difficulty and were ideal for measuring variations in student abilities.

Two other items, S4 (0.127) and S15 (0.216), fall into the difficult category, as fewer than 30% of students selected the high-scoring option. Scores that are too low may indicate that the item is too challenging, unclear, or has too many answer options. Therefore, these items are recommended for revision, both in terms of the question wording, stimulus context, and the arrangement of the answer choices. No item had an index above 0.70, meaning none were considered too easy. This indicates that the instrument as a whole is not too simple and is able to challenge students in critical historical thinking.

In general, the composition of items with a predominantly moderate level of difficulty contributes positively to the instrument's measurement function. This ensures that the resulting scores reflect the diversity of student abilities and supports the application of advanced measurement models such as Item Response Theory (IRT) in subsequent analysis.

Analysis Results with Item Response Theory (IRT)

Model Fit Test

To determine the Item Response Theory (IRT) model that best fits the characteristics of the historical thinking instrument, a comparison of three polytomous IRT models was conducted: the Partial Credit Model (PCM), the Generalized Partial Credit Model (GPCM), and the Graded Response Model (GRM). The assessment criteria included the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), the Sample-size Adjusted BIC (SABIC), the log-likelihood, and additional fit indices such as RMSEA, SRMSR, CFI, and TLI.

Table 7.Comparison of IRT Model Fit

Model	AIC	BIC	SABIC	logLik	RMSEA	SRMSR	CFI	TLI
PCM	5424,778	5613,137	5407,527	-2647,389	0,0856	0,1323	–	–
GPCM	5414,272	5646,099	5393,040	-2627,136	0,0906	0,1365	0,000	-0,3933
GRM	5377,857	5609,684	5356,625	-2608,928	0,0830	0,1195	0,0899	-0,1701

The table above shows that the Graded Response Model (GRM) performed best among the three models. This is indicated by the lowest AIC, BIC, and SABIC values, and better RMSEA and SRMSR values. The GRM's log-likelihood value (-2608.928) indicates that this model best aligns with the actual data. Therefore, the GRM was selected as the primary model for subsequent item parameter analysis.

Grain Parameters Based on GRM Model

After the Graded Response Model (GRM) is determined as the best model based on a comparison of global fit indicators, the next step is to analyze the characteristics of each item in the instrument using IRT parameters. In the GRM, each item is analyzed based on two main components: the discrimination parameter (a) and the category threshold parameters (b1 to b4). The discrimination parameter (a) indicates how sensitive an item is in distinguishing participants with different ability levels. The higher the a value, the stronger the item's discriminatory power. Meanwhile, the threshold parameters (b1–b4) reflect the ability level (theta) required for participants to move from one response category to the next.

Additionally, an item location column is included as the average of b1 to b4. This value is useful for indicating the overall difficulty level of each item and mapping its position along the ability scale. The following table presents the parameters of the 10 selected items retained in the GRM model based on the results of the item quality selection.

Table 8.Grain Parameters Based on GRM Model

Item	a (Discrimination)	b1	b2	b3	b4	Location (Mean b)
S1	0,399	-3,195	3,156	-4,840	-0,666	-0,559
S2	0,821	-2,218	-0,625	-0,865	-1,188	-0,870
S3	0,230	-1,548	-3,309	-4,963	0,993	-1,583
S5	0,438	-0,731	-0,723	-1,427	-3,082	-1,254
S6	0,369	0,046	-0,392	0,046	-4,226	-1,072
S7	0,519	1,156	-1,749	0,908	-4,788	-1,216
S9	0,510	-2,614	-0,907	0,767	-2,468	-1,104
S10	0,754	-0,559	-1,502	0,943	-2,930	-0,898
S11	0,754	-1,116	-1,227	0,229	-2,231	-0,892
S13	0,666	-2,004	-0,885	-1,359	-0,443	-0,820

The analysis results in Table 8 show that all items in the Graded Response Model (GRM) have discrimination parameters (a) ranging from 0.230 to 0.821, categorized as moderate to high. Item S2 (a = 0.821) and S10 and S11 (a = 0.754) showed the strongest discriminatory power regarding students' historical thinking skills, while item S3 (a = 0.230) had the lowest discrimination power and requires further evaluation. Variations in the threshold parameters (b1–b4) were also significant, reflecting varying levels of difficulty between items. For example, item S1 had an extreme b3 value (-4.84), indicating that only participants with very high ability could

choose the highest response; while items S6 and S7 showed positive b1 values (0.046 and 1.156, respectively), indicating that respondents must have above-average ability even to achieve the lowest score category—indicating high initial difficulty. The item location values, which indicate the midpoint of the difficulty level, were mostly between -0.56 and -1.58, with item S3 being the most difficult and S1 being the easiest. Overall, the distribution of the discrimination, threshold, and location parameters reflects that the ten selected items have good psychometric characteristics and cover a range of abilities relevant to measuring historical thinking in a tiered manner in accordance with competency-based assessment principles.

Estimation and Test Information Function Based on GRM Model

Within the Item Response Theory (IRT) framework, the test information function and ability estimate (theta) are important aspects for assessing the extent to which an instrument can differentiate learners at different ability levels. To strengthen the results of the item parameter analysis, this section presents four main elements: (1) individual item information function, (2) test information function and SEM, (3) student ability distribution (theta), and (4) conditional reliability by ability level.

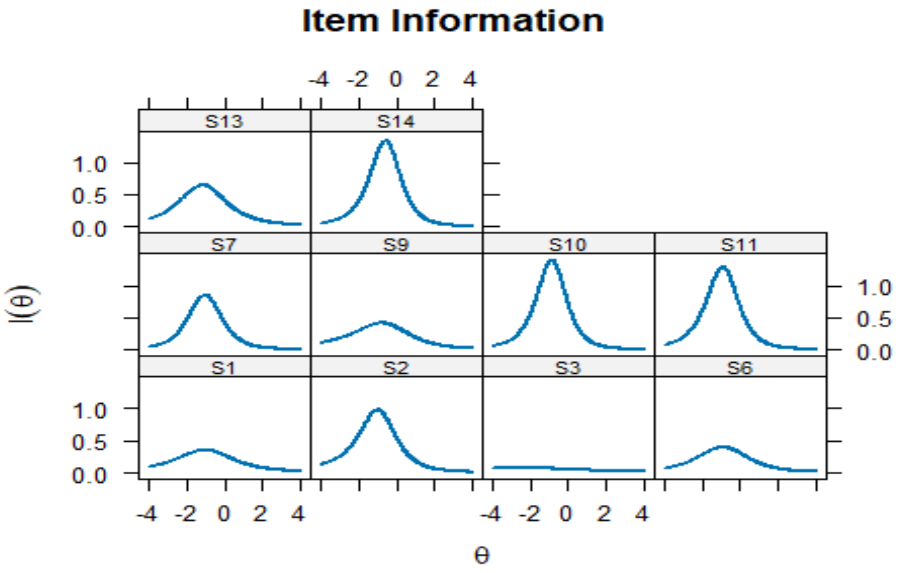

Figure 1.Item Information Function

Figure 1 presents the information functions of the ten selected items analyzed using the Graded Response Model (GRM). The information curve of each item indicates how much the item contributes to providing information at various levels of historical thinking ability (θ). Item S14 provides maximum information around θ = 0, indicating high sensitivity for students with average ability. Items S10, S11, and S2 also show a similar pattern, providing optimal information at the ability range between -1 and 0. In contrast, item S3 provides the lowest information, in line with its low discrimination value (α) in the previous analysis. These results confirm that most items in the instrument effectively discriminate students at moderate to somewhat low ability levels.

After analyzing the information contribution of each item individually through the Item Information Function, we then discuss how all the items in the instrument work together to provide overall measurement information, which is depicted by the Test Information Function and Standard Error of Measurement in Figure 2.

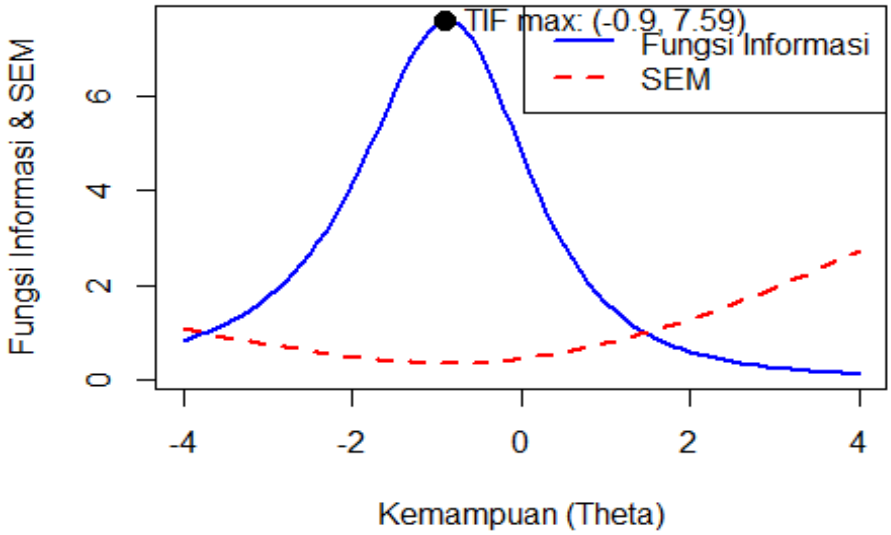

Figure 2.Test Information Function and SEM

Figure 2 shows the test information function (blue line) and standard error of measurement (SEM) (red dotted line) as a function of historical thinking ability (θ). The highest information point is reached at θ = -0.9 with an information value of 7.59. This indicates that the instrument is most accurate in measuring students with slightly below-average abilities. Meanwhile, the lowest SEM values also appear around this range, indicating that measurement error is minimal at the ability level most relevant to the target population. Overall, this graph indicates that the instrument has high measurement efficiency and precision across the ability range commonly found in secondary education. Furthermore, to obtain an overview of the distribution of historical thinking ability in the sample population, the following histogram of student ability estimates is presented in Figure 3.

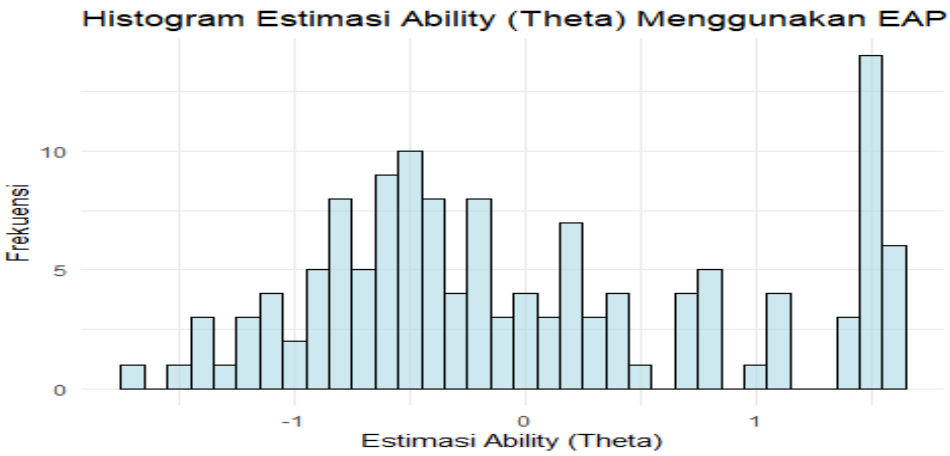

Figure 3.Histogram of Estimated Ability (Theta) Using EAP

Figure 3 shows the distribution of students' estimated historical thinking ability (θ) based on the Expected A Posteriori (EAP) method. The histogram shows a relatively symmetrical distribution, with the highest concentration in the range $-1 \leq \theta \leq 0$. This indicates that most students are at a moderate to somewhat low level of ability, corresponding to the peak area of the test information function in Figure 2. There are also a number of students with very high ability ($\theta > 1$), indicating diversity within the sample population. This finding supports the validity of the instrument in distinguishing levels of historical thinking competence in a real and meaningful way. To ensure the consistency of the instrument's measurement across different ability levels, a conditional reliability analysis is presented in Figure 4.

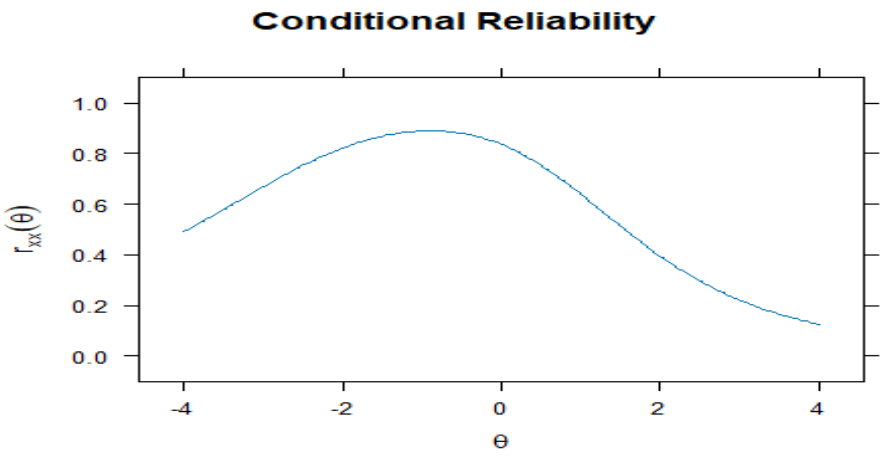

Figure 4.Conditional Reliability

Figure 4 presents the conditional reliability or conditional reliability of the instrument based on ability level (θ). The highest reliability is in the range of $\theta = -1$ to 0 with a value approaching 0.88, indicating that the most stable and consistent measurement occurs in the range of student abilities that dominate the sample population. As the ability extremes increase or decrease (beyond -2 or +2), the instrument's reliability tends to decrease. This is a common characteristic of educational instruments designed to measure students with dominant abilities at the middle level. Overall, this conditional reliability supports previous findings that the instrument is highly effective in upper-middle-class contexts.

Discussion

The results of this study indicate that the developed instrument successfully integrates four main domains of historical thinking into a competency-based assessment format. These four domains include: (1) source evaluation and interpretation, (2) causal reasoning, (3) continuity and change, and (4) ethical reflection and historical perspective-taking. The first domain emphasizes students' ability to critically analyze and interpret historical sources to understand the context and meaning of past events. Previous studies have confirmed that the use of historical sources is crucial for developing critical thinking about the past (López-García & Miralles-Martínez, 2024a; Shukshina et al., 2017).

Furthermore, causal reasoning is a domain that requires students to understand cause-and-effect relationships in history, including analyzing how various events influence each other. This ability is considered crucial for deepening students' understanding of the dynamics of complex historical processes (Miralles & Ibagón, 2022; Thorp & Persson, 2020; Whitehouse, 2020). Meanwhile, the domain of continuity and change encourages students to recognize recurring patterns and those that transform over time and understand their historical implications within a broader context. This ability is considered crucial for developing a holistic and multi-layered understanding of history (Martínez-Hita et al., 2022; Van Boxtel et al., 2020).

The fourth domain, ethical reflection and historical perspective, encourages students to consider the moral dimensions of historical events and understand the diverse perspectives of historical actors without resorting to anachronism or presentism. Several studies have shown that these skills are crucial for fostering critical and democratic civic awareness (Carrasco & Serrano, 2022; Miralles & Ibagón, 2022).

The integration of these four domains into competency-based assessments allows for a more comprehensive evaluation of students' historical thinking skills (Sánchez-Ibáñez et al., 2021; Tahiri et al., 2016). Implementing these domains in the curriculum not only enhances critical thinking skills and historical understanding but also strengthens students' engagement in civic issues (Wagner et al., 2025). Therefore, developing valid and reliable assessment tools is crucial as a means to effectively measure students' historical thinking competencies (Ofianto, Saputra, et al., 2024; Setiawan et al., 2023; Smith et al., 2019).

The integration of the four domains of historical thinking into competency-based assessment not only creates a comprehensive evaluation framework for students' historical understanding, but also strengthens the ethical and reflective dimensions in history learning, which ultimately supports the birth of a generation of citizens who think critically and are civilized.

The internal consistency of this instrument showed excellent results, indicated by a Cronbach's Alpha value of 0.804, which is classified as high. This value indicates that the items in the instrument work harmoniously in measuring the same construct, namely historical thinking skills. According to Malapane and Ndlovu (2024), an alpha value above 0.70 is considered an indication of adequate internal consistency, and a value between 0.80 and 0.90 indicates an excellent level of reliability in the context of educational assessment. Thus, this instrument can be said to have strong reliability in consistently measuring student competencies.

In addition, the results of the Classical Test Theory (CTT) analysis showed that 14 of the 16 items had an item-total correlation (r) above 0.30, indicating that most items had adequate discriminatory power. Item-total correlation is an important indicator in evaluating whether an item can effectively differentiate students with high and low ability levels. According to Guo et al. (2022) and Metsämuuronen, (2020), an r value > 0.30 in the CTT is considered sufficient to indicate that the item has adequate discriminatory quality. Thus, this instrument is not only internally consistent but also effective in distinguishing variations in students' levels of historical thinking ability.

The results of this analysis provide strong empirical evidence that the historical thinking assessment instrument developed has met the criteria for good item reliability and discrimination, in accordance with the basic principles in developing valid and reliable educational measurement instruments.

The Graded Response Model (GRM) was selected as the best model in this study based on its statistical superiority in handling sequential polytomous data, particularly in the context of educational assessments using graded scales. The GRM is widely recognized as the most suitable IRT model for analyzing responses with ordered categories, such as Likert scales or graded multiple-choice items. This model provides stable and accurate parameter estimates, especially in measuring students' latent abilities in a graded manner through discrimination information and category thresholds (Harsana & Lumenyela, 2023; Samejima, 2018). In this study, the GRM showed the lowest AIC and BIC values, as well as smaller RMSEA and SRMSR values compared to the PCM and GPCM models, indicating a better model fit (da Silva et al., 2019). The GRM's log-likelihood value was also higher, indicating that this model better represents the empirical data (Reimers et al., 2023).

The main advantage of the GRM lies in its ability to handle ordinal data and provide detailed estimates of item discrimination (a) and category thresholds (b1–b4). This information is crucial for understanding the extent to which an item differentiates participants at different levels of historical thinking ability (Auné et al., 2019). Furthermore, the GRM boasts high measurement precision across the ability spectrum and has been shown to excel in construct and test-retest validity across a range of educational and psychological assessment instruments (Chang et al., 2022; Yahya et al., 2025). In educational assessment, the GRM has been widely used to evaluate student performance and interpret attitude scale responses (Simian & Bissell, 2017), while in psychology and health, it has been used to measure constructs such as anxiety, depression, and quality of life (Titman et al., 2016).

Considering all these advantages, the GRM is not only statistically superior but also conceptually highly relevant for competency-based assessment of historical thinking skills. This model allows for in-depth analysis of item performance in distinguishing different levels of students' understanding of historical evidence, causal relationships, and ethical reflection. Therefore, the application of the GRM in this study provides strong empirical justification while strengthening the instrument's validity and accuracy as a responsive and accurate educational assessment tool.

Further analysis using the Graded Response model indicates that most of the instrument's items provide the highest information in the moderate to moderately low range of historical thinking ability (θ = -1 to 0), with items S14, S10, and S11 being the most informative. This indicates that the instrument is most accurate in distinguishing students in the dominant ability group. This finding is reinforced by the test's information function, which peaked at 7.59 at θ = -0.9, indicating optimal measurement precision in that range. These results align with the principles of item response theory, which emphasizes that the test's information function is particularly useful for assessing measurement accuracy across multiple ability levels (Auné et al., 2019).

Figure 3 shows that the majority of students fall within the historical thinking ability range (θ) between -1 and 0, consistent with the peak of the test information in Figure 2. This finding is reinforced by Figure 4, which shows the highest conditional reliability, at approximately 0.88, within the same ability range. The consistency between the distribution of student abilities, test information, and measurement reliability confirms that this instrument is effective and stable in measuring the historical thinking abilities of students with intermediate ability levels. This aligns with the findings of Domínguez-Castillo et al. (2021) and Ofianto et al. (2024), which indicate that IRT-based instruments with optimal information structures across the ability range of the majority of students have high levels of validity and reliability and are relevant for the context of history learning in secondary education.

The findings of this study provide strategic implications for history teaching and assessment at the secondary education level. The developed instrument offers an assessment approach oriented toward historical thinking competencies, rather than simply mastering content or memorizing historical facts. History teachers can utilize this instrument as a formative assessment tool to map students' abilities to analyze, evaluate, and reflect on past events critically and contextually. Thus, assessment results can be used to design more targeted learning interventions.

Conclusion

This study successfully developed a historical thinking skills assessment instrument that integrates four main domains conceptually and empirically. The analysis results indicate that the instrument has high content validity, strong internal reliability, and good psychometric qualities based on the CTT and IRT approaches. The selection of GRM as the best model strengthens the instrument's reliability and precision in differentiating students at various ability levels, especially in the range θ = -1 to 0, which reflects the abilities of the majority of students. The test information function, histogram of ability estimates, and conditional reliability also indicate consistency in measurement effectiveness. The practical implication of these findings is the availability of relevant assessment tools to support competency-based history learning in the Independent Curriculum, with an orientation towards strengthening critical and reflective thinking. However, this study is still limited to a single regional sample and does not include construct validation through Confirmatory Factor Analysis (CFA). Therefore, further studies are recommended to expand the population reach, test the instrument's stability across school and cultural contexts, and develop a digital or adaptive version based on Computerized Adaptive Testing (CAT) to improve the efficiency and accuracy of assessment in the digital learning era.

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Aesthetic Attention and Cognitive Overload in the Digital Age: Towards Visual Literacy for Platform Society

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Abstract: In recent years, the word "aesthetic" has become ubiquitous: from how we dress and decorate our homes to how we choose our hobbies or document our lives online. But how much of this constitutes a meaningful aesthetic experience? This paper proposes a framework for understanding aesthetic attention in the digital age. I argue that social media changes how we perceive the world, forming rhythms of interaction that flatten the aesthetic field and lead to desensitization, loss of reflection, and a passive mode of cultural consumption. I analyze examples from contemporary visual culture, such as TikTok's "core" trends, stylized trauma on Instagram reels, and the aestheticization of everyday life. After hours of scrolling, the only thing that remains is a blurred mix of images and sounds, where nothing can really be distinguished. I propose that aesthetic judgment in digital contexts becomes increasingly automated, pre-filtered, and less reflective.

From an educational perspective, this phenomenon raises urgent questions about visual literacy, particularly among younger users. I argue for a renewed pedagogical interest in digital aesthetics that empowers individuals to recognize the mechanisms behind what they see and feel online, and to reclaim their capacity for deep attention and critical thinking.

Keywords: aesthetic attention, cognitive overload, everyday aesthetics, visual literacy

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Introduction

Since its introduction in the 18th century by Baumgarten, the term "aesthetic" has gone through a number of significant changes, and with them, its relevance changed too. In this paper we will focus on its contemporary significance, where what was once considered a distinct philosophical discipline is now on everybody's lips. In this day and age, we speak of aesthetics of living, aesthetic meals, aesthetic outfits, aesthetic houses, workspaces, and even aesthetic sports or study routines. Platforms like Instagram, TikTok, and Pinterest have popularized certain styles and redefined how we relate to the world visually.

Living aesthetically has become the norm, especially among young millennials, gen Z, and even gen Alpha. Every item that is bought, every action that is made, needs to fit an aesthetic. This kind of living is shaped by

algorithmic infrastructure and social validation metrics, which calls for a deeper reflection: are we engaging in meaningful aesthetic experiences, or merely performing them within a system of digital visibility?

We will examine how everyday aesthetics are transformed in the context of the platform society (van Dijck, Poell, & de Waal, 2018), an environment in which digital platforms mediate cultural expression, identity construction, and everyday living. As Yuriko Saito (2007) has shown, everyday aesthetics focuses on the aesthetic dimension of ordinary activities and objects; now, the "aesthetic" becomes a principle of daily existence, often influenced by trends, virality, and algorithms. Our lives are a continuous cycle of choices determined by what performs online, generating a culture of aesthetic uniformity. This is the framework for understanding how aesthetic attention is shaped by digital platforms.

The central question this paper addresses is how do social media platforms influence the aesthetic perception and attention in everyday life? Drawing on philosophical theories of perception (notably Arnold Berleant's concept of *aesthetic engagement* and John Dewey's *art as experience*) as well as insights into attention and cognitive overload, we will explore the mechanisms through which digital platforms modulate our sensory and affective engagement with the world.

The aim is to provide a framework for analyzing how aesthetic judgement is transformed and, more often than not, flattened and standardized by the prevalence of the virality culture. When everything is potential content, even everyday life, it is hard to leave space for authenticity to flourish.

The paper will also explore what are the emotional and cognitive consequences of "living aesthetically" under algorithmic conditions. We will argue for the educational importance of developing visual literacy and critical skills when it comes to judging what reflects one's authentic self and what is just another attempt at fitting in.

Aesthetic Attention and Cognitive Overload

When the world is dominated by endless visual stimuli, the aesthetic perception is undergoing a structural transformation. No longer anchored in contemplation or intense emotional responses, it becomes a mechanism for content consumption, defined by algorithms that promote speed and superficial reactions. This kind of aesthetic experience doesn't need time or undivided attention from the viewer. Its only quality is its potential for quick engagement, and the viewer that wishes to have a relevant online presence must ask themselves these questions: can I consume this content? Can I turn it into a way of engaging with my audience (through sharing it - an evergreen form of validation)? Is it *relevant* enough not just for me, but for the others? If I adopt its characteristics and use it in my own content, will I be *relatable* or is it too niche? The digital platforms reward content that is easy to grasp, emotionally charged enough to "hook" the viewer, but visually and cognitively optimized enough not to disrupt the constant scroll. One striking example is the stylization of trauma in short videos where painful experiences are turned into an *aesthetic* of misery. Deeply aware of the camera in front of them, content creators exploit themselves by turning their suffering into visually pleasing media, always keeping

in mind what filter, music, filming angles, and, of course, what kind of emotional distress can perform best online.

The result is a kind of aesthetic short-circuit where attention is captured but not sustained; images are consumed but rarely contemplated. As social media best practices advise, the first 3 seconds are the key to hooking the public and they are the most important metric for quantifying the success of anything online. After that, the content can be forgotten; it doesn't matter if we're referring to tragedies, news, daily vlogs, tutorials, or even artworks.

This turns into a numbing of feelings and thoughts, which has cognitive consequences. When everything is "aesthetic" (as in "visually pleasing" and never truly provocative or disruptive), nothing truly stands out. The surplus of visual input leads to an attention economy where saturation breeds desensitization. The eye becomes trained to glide rather than rest; to recognize patterns rather than encounter singularity. Over time, this weakens the depth of aesthetic experience, reducing perception to a surface-level scan for relevance, trendiness, or shareability.

Arnold Berleant's philosophy offers a powerful counterpoint to the detached, passive modes of perception encouraged by digital platforms. In contrast to the Kantian notion of disinterested contemplation, Berleant argues for an aesthetic experience rooted in active, embodied engagement with the environment. According to his concept of aesthetic engagement, perception is not a one-directional gaze, but a mutual relationship in which the perceiver and the perceived interact dynamically. Aesthetic experience, in this view, is not something we observe from a distance, but something we live through (Berleant, 1991).

This framework is especially relevant when applied to the everyday aesthetics of contemporary digital life. If the aesthetic experience arises from active participation, the viewer must be fully present for the experience to take place. However, on digital platforms, users only appear to participate - through liking, sharing, remixing - but they are in fact in a passive state, where the content comes to them and they never actually choose what they want to see. A work of art is mixed with personal content and jokes ("memes"). He or she merely reacts to what is already optimized for response.

It is important to clarify that aesthetic experience, as understood here, does not depend on whether the object is considered art in any traditional sense. As Arnold Berleant emphasizes, "it does not matter whether we call something art or not; what is important is how the object works in appreciative experience. It is such experience that lies at the heart of the aesthetic" (Berleant, 2010, p. 77). Aesthetic value, then, emerges not from the object's status, but from the experiential situation it creates what Berleant names "the aesthetic field", an "experiential situation involving appreciative, creative, and performative dimensions, as well as one that focuses on an object". (Berleant, 2010, p. 76–77).

In this sense, platforms give the illusion of aesthetic engagement without fully enabling it. The viewer is

permanently half distracted, never fully present, never immersed. Berleant's vision of aesthetic perception as an open-ended, participatory encounter is replaced by a closed loop of attention capture and algorithmic repetition.

This loss of depth and presence can be further understood through the lens of Byung-Chul Han's critique of digital culture. In his book, *The Burnout Society*, Han argues that we live in an age of hyperattention, which turns into a scattered mode of awareness (Han, 2015, p. 13), where our impossibility of maintaining attention is caused by the *surplus information*. The sheer volume of information erodes the capacity for sustained reflection or emotional resonance; in a world where everything must be immediately consumed, attention becomes superficial by necessity (Hans, 2017, p. 60). When there is so much to consume, there is no time left to contemplate. Psychologically, this environment favors quick emotional reactions but weakens profound feelings and thoughts.

This hyperaccelerated environment produces what Han calls in *The Disappearance of Rituals*, "the hell of the same": a world where all the differences are flattened and only variations of the same are permitted (Han, 2020, p. 32). The emotional consequence of this condition is a constant fatigue, endemic for the *burnout society* (Han, 2015), and it is the result of continuous stimulation without depth or pause. Aesthetic experience, once an opportunity for profound feelings and thoughts, has become a reason for surface reactions.

Both Berleant's participatory aesthetics and Han's diagnosis of overstimulation ultimately point to the same faculty: attention. In capitalist society, attention is one of the most valuable currencies, and everyone fights for it. No matter how much people try to divide their attention, there is only so much of it, and at some point, there's simply too much information around to be processed. This explains why social media is not a neutral stage for aesthetic or cultural information, but a curated ecosystem with one main goal: to catch the public's attention. From brands and corporations to regular content creators, everyone who shares something online does so in the hope that the platform will push forward their content. That it will be seen, engaged with, and rewarded with visibility, or, in other words, that it will earn a piece of the user's attention.

The algorithm has its own rules: what becomes visible is what is most likely to provoke an immediate reaction. If something proves successful, it becomes a pattern: color palettes, editing rhythms, facial expressions, and even types of vulnerability might follow familiar templates. This aesthetic prefiltering reduces the role of individual taste, replacing it with a kind of automated responsiveness. As a result, aesthetic judgment is displaced by metrics, and aesthetic experience is turned into a performance.

Living to be seen: Everyday Aesthetics as Performance

While earlier we explored how the aesthetic is received and consumed under algorithmic pressure, we must now turn to those who produce it: everyday users, who shape their lives in ways that anticipate online approval.

An individual that wishes to live aesthetically in the capitalist contemporary world must construct a life that can

be recognized as aesthetic first within a platform logic, and only afterwards offline. This process is often driven by viral aesthetics, such as *cottagecore, clean girl, old money, balletcore e*tc. Maybe not incidentally, these trends often tap into Eurocentric feminine ideals, including softness, delicacy, nostalgia, discipline, or luxury. Such aesthetics are formed by a cluster of visual and emotional cues that, more than showing an image, represent a way of life. To follow a contemporary aesthetic style is to embody it at all times - or at least give the impression that you do so. By turning it into a "core" aesthetic, it provides users with templates of self-presentation, shaping what they post and sometimes how they live.

The democratic quality of the social media platforms is a perverse one, since behind its pretense lies a complex set of mechanisms, never fully disclosed and transparent, ever changing, and made to always deliver familiarity. As a result, everyday life becomes increasingly structured by what is likely to succeed online. Even mundane choices, such as what to wear, where to eat, how to spend a Sunday, are made under the influence of potential visibility. It's not that any online platform can *force* these attitudes, it's just that it provides the conditions under which such behavior feels the logical thing to do, because it plays into one of the most powerful desires humans have: to fit in, to belong to a group. And online, one can always find a community that will embrace them, that will validate them with shares, likes, and comments, if only they fit in well enough. Because as easy as it is to belong to a *core*, it is just as easy to slip out of it. One can never relax, because to be on the internet is to perform. And increasingly, to live is to perform. A real experience may feel irrelevant unless it can be shared, and it will not be shared unless it is aesthetically pleasing enough for the potential online audience.

This process has both internal and external dimensions. Internally, individuals self-regulate their behaviors and emotions through an imagined audience. Externally, they are aware that others may capture and publish their image at any time. The self is never fully private, never not performing. The fear is not simply that one might be seen, but that they might be seen incorrectly, outside the aesthetic framework they wish to occupy.

In its turn, the filter of social media becomes a filter of perception itself. The algorithm shapes desire and experiences are chosen based on what circulates online, making people gravitate towards places and experiences that are shareable. What is not aestheticized risks becoming invisible.

Towards a Visual Literacy for the Digital Age

Reimagining Aesthetic Experience: Dewey's Legacy

If aesthetic attention has become fragmented and passive in the digital ecosystem, I propose that we revisit John Dewey's concept of *art as experience* (Dewey, 1980). Dewey argued that aesthetic experience is inherent in everyday life. The boundaries between life and art dissolve when an experience is fully lived, as a complete action, which requires the viewers full attention (Dewey, 1980, p. 3-4). For Dewey, aesthetic experience arises when one is fully immersed, free from anxieties of past and future, so that perception, memory, and anticipation merge into a single, complete moment (Dewey, 1980, 18).

It would seem that the Internet holds the potential to fulfill what Dewey long advocated for: a democratization of art and aesthetic experience; an increased awareness for aesthetic living and the dismissal of an art that is separate from everyday life and from the regular public. However, as stated before, the promise of democracy is only the seductive illusion that online platforms promote. In truth, they deliver a fragmented experience, bite-sized emotions ready to be engulfed in one doom-scrolling session, quickly forgotten and easily replaced with another, newer piece of content.

Importantly, Dewey did not advocate for returning to traditional or institutionalized forms of art or contemplation. The aesthetic experience proposed by him could arise anywhere, provided there is undivided attention, curiosity, and availability to have an authentic, profound, emotional response (Dewey, 1980, 21). This opens a path for reclaiming aesthetic autonomy in the digital age by cultivating a form of deep attention, in which users are active participants that make the algorithm fit their desires, rather than following the imposed trends.

The question is thus what kind of attention the aesthetic experience now requires, and whether another form of aesthetic autonomy can still be cultivated. Before turning to any solution, we must ask: under what conditions can aesthetic experience once again become integrated, reflective, and transformative?

Cultivating Reflective Aesthetic Experience in the Digital Age

Developing a visual literacy goes far beyond interpreting images. It means to critically assess the emotional and intellectual impact of visual content in the context of the platform society, because each piece of content produced and shared online relies on its own power structures. Sometimes this happens with the intention of the creator - when it comes to ads, for example - sometimes, the creator has little to do with it. The digital algorithm evaluates its potential to generate engagement and, of course, profit. What audience will it reach and how become central. This is precisely why visual literacy is needed if one wishes to understand all the subtle ways in which images become tools to be used for persuasion and even commercial gain.

As shown by Dewey's theory, if aesthetic experience is to regain its integrative and transformative quality, it must occur under conditions that allow for reflection. These conditions are rarely found in the mechanisms of social media, where viewers are mostly passive receptors of whatever is thrown by the platform at them. It should be noted that this does not mean the digital space is inherently incompatible with aesthetic experience, it only means that it must be approached differently.

Cultivating a reflective aesthetic experience lays in the ability to choose what to see from the internet, it means resisting the temptation of the dopamine rush provoked by constant scrolling and the appeal of the pleasant and reassuring standardization imposed by algorithms.

When the consumption stops, even if for a couple of moments, in order to better grasp a piece of media, the user's mind will begin to feel restless. In capitalist society, contemplation is seen as a waste of resources, more accurately, of the most important ones: attention and time. Why spend time looking at just one piece of content, when you could consume dozens of other pieces?

Digital life, then, should be approached as a conscious practice. Some users already practice this by curating their feeds so that only the few people and pages they are genuinely interested in appearing in their feed, setting time limits, or seeking out slow, intentional content.

However positive such attitudes might be, such a shift cannot rely solely on individual willpower, it requires a restructuring of the environment itself. One possible direction is a return to the original ethos of the internet as a space for genuine expression, like in the early stages of the internet when users navigated through multiple sites, each with its own purpose. One would open a blog to share thoughts, a forum to ask questions, and a platform like DeviantArt to share artworks. There was no single dominant feed dictating what was worth seeing.

Today, by contrast, we scroll through mostly the same two or three platforms which give us everything: from personal updates from friends, photos and jokes, to global news and tragedies, from art to ads, all in the same big basket of content. A "hell of the same" indeed, where the content, however different in its original form, looks like more of the same when part of a continuous flux on information.

As van Dijck, Poell and de Waal (2018) argue, we now inhabit a "platform society", where digital infrastructures, controlled by corporations, have become the primary gatekeepers of visibility. What is seen, or, on the contrary, what remains invisible, is decided by digital mechanisms that provide the public with what they must like. And it's easy and incredibly tempting to fall in this trap without realizing, because it's one of the most comfortable traps of all: in this busy world where everybody is tired, there's someone out there, a helpful Big Brother that promises to take care of one's leisure time - what they see, where they go, how they dress, even what they like. Resistance is not an easy task, because why would anybody want to resist this?

Like everything, comfort has a cost. Within the capitalist framework, nothing is truly offered for free, so if it looks like there is no price, it just means that the price lies in what humans can inherently offer - their behavioral data and online presence. The illusion of effortless consumption masks a transaction in which platforms monetize every single online interaction.

To make the seriousness of this situation visible, educational institutions and the communities of educators can encourage individuals to become aware of their own digital footprint: how much of their life, of their choices can be found online? How easy is it to understand who someone is, what they enjoy, and what they would want to see online? How much of what they like is influenced by what is available online? Every experience chosen due to its online virality, from the films one watches, to where they travel on holiday, can be seen as data that was once given away in exchange for targeted content.

Furthermore, such discussions might explore how personal taste and self-presentation would change if the influence of the internet were removed. Wo should decide what is truly worth seeing: the people or the algorithms?

Only after these elements have been clarified, can we shift the focus to how resistance can develop? What might an act of resistance look like? For one, platforms themselves could be redesigned to prioritize diversity, rather than popularity and familiarity. From the user's point of view, a radical gesture would be moving from the For You Page altogether and cultivating intentional browsing habits: visiting artist websites, subscribing to independent newsletters, joining niche communities that don't optimize for reach, and intentionally exposing themselves to content creators outside their comfort zone.

A good example of this attitude appears in recent calls to bring back the so-called "OG internet" aesthetics. As explored in a 2025 article from *Dazed*, creators and users alike are pushing back against over-curation by embracing imperfection, spontaneity, and non-optimized self-expression (Dazed, 2025). It is a way of resisting the pressure to always be ready to turn your own life into content, and of reintroducing uncertainty and playfulness into the visual language of social media. In this view, aesthetic autonomy is a commitment to complexity, to images that don't immediately explain themselves, to formats that aren't instantly engaging, but can linger in the mind. This cultural shift also depends on education, on forming users who understand how the social media mechanisms work and who are capable of choosing what they want to see and engage with.

For instance, instead of avoiding or dismissing as unimportant the trends that young students are interested in, they could be analyzed in class. An aesthetic like the "clean girl" or the "tradwife" carries significant implications for how society understands gender roles, ideals of femininity, history, and ideologies. Teachers could discuss with students why such trends are rooted in a nostalgic and hyper-feminized version of womanhood are resurfacing now. How do the effects of the economic uncertainty and the rise of burnout influence such desires for what is, at least apparently, a form of slow, simple living? It is a topic that starts with aesthetics but reaches far beyond it and for students it can be an invitation to reflect on Eurocentric and privileged ideals that exclude many other cultures.

Only when such habits are collectively cultivated in schools, institutions, and communities, can aesthetic attention begin to thrive again.

Conclusion

Throughout this research, we have examined how everyday aesthetic experience is reshaped in the digital world. Theories about immersion and contemplation are left behind in the contemporary world where speed and abundance of content must prevail above all.

This shift has wide implications, from a homogenization of taste influenced by digital algorithms to a new way

of living and presenting online and offline: constantly aware of being observed, constantly performing for an invisible, potential audience that exists somewhere online.

From an educational standpoint, it raises the urgent need for tools that help users recognize and resist the visual norms they are exposed to daily. The digital environment is not inherently hostile to aesthetic depth; as argued throughout, it contains within it the potential for meaningful aesthetic engagement, provided it is approached with certain strategies. The reclaiming of deep attention and aesthetic autonomy begins with small, individual, shifts in perception, but it also requires broader systemic change.

Future research should question the ethics of digital platforms, the opacity of algorithms, the illusion of democratization, and the user's agency, all subjects fit for educational contexts. Especially for younger generations, who never knew a world without the power of the internet, it is vital that they are made aware of the profound ways in which digital media influences the way they think, what they like, how they feel, in short, it influences their very lives in unexpected ways.

In the end, a return to a meaningful aesthetic experience in the digital age is a step towards a future where the public is made up of active participants and critical thinkers, not mere consumers.

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Figurative Expressionism in Contemporary Ceramic Art

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Abstract: Throughout art history, artists have used different representations as a means of self-expression. The figure is one of the most effective methods used to depict humans. Many artists have conducted figurative research in fields such as painting, sculpture, and ceramics, producing numerous works. The use of figures is also quite common in contemporary ceramic art. Contemporary artists have worked with animal, human, and plant figures on vases and plates using underglaze and overglaze paints in ceramics, while also using human bodies in ceramic sculptures. As Ceramic Art moved beyond the industrial sphere, it gained different dimensions and took its place alongside art forms such as painting and sculpture as one of the oldest Traditional Arts. Over time, many movements have emerged that have influenced different art forms. The moment an artwork is created, the language and forms of expression to be conveyed are also reflected in art movements. The Expressionism movement, briefly defined as the externalization of the inner world, emerged in Europe in the 20th century as an art and architecture movement. Expressionism can also be defined as a contemporary art movement that expresses the inner world, in opposition to Naturalism and Impressionism. The Expressionist narrative style avoids ordinary and direct narratives, favoring a more melancholic, emotionally disturbed, harsh, and striking style. Although the movement has lost its importance over time and is on the verge of disappearing, its contribution to many branches of art continues today.

Keywords: Contemporary Art, Ceramics, Figurative Expressionism

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Introduction

Throughout art history, the figure has been one of the most powerful tools for human self-expression. Human emotions, social concerns, and existential questions occupy a central position in various art disciplines in a concrete form. In this context, ceramic art has a rich history of figurative expression dating back to primitive times. In the contemporary period, ceramics has been positioned as an original artistic language through industrial processes; it has gained theoretical depth through interactions with disciplines such as painting and sculpture (Öztürk & Ünal, 2022; Öztürk, 2021).

The Expressionism movement, which emerged in Europe in the early 20th century, did not aim to kill the artist's inner world, emotional life, and individual experiences. Emerging in opposition to the objective depictions of Naturalism and Impressionism, this movement developed a melancholic, expressive, and shocking narrative language through plastic strategies such as distortion, exaggeration, and the use of strong colors. The effects of Expressionism spread to different art forms over time, and figurative expressionist approaches have gained a prominent place in contemporary ceramic art. This study examines how figurative expressionism is approached in contemporary ceramic art. Through the expressive approaches of contemporary ceramic artists such as Melisa Cadell and Johnson Tsang, it discusses how it is used as a tool for conveying social criticism, existential questioning, and personal traumas. Furthermore, in the section on personal practices, examples are given of how figurative reliefs produced using ceramics embody and express human emotional and spiritual states. The primary aim of the research is to reveal the plastic and conceptual dimensions of figurative expressionism in contemporary ceramic art.

Figures in Contemporary Ceramic Art

The term "figure" refers to objects that have been used in various branches of art since ancient times, either as entities existing in nature or as imaginary beings. Although human and animal figures are the first to come to mind when the term "figure" is used, the use of objects seen in nature in works of art has given rise to figurative ceramic works. Throughout the period from ancient times to the present day, the human figure has always been the central point. Within its own cycle, in the relationships between societies and in cultural life, the human figure comes to the fore. In ceramic art, the figurative form of expression also has an expressive effect. In this context, it has been used as a symbolic expression on special days, ceremonies, and religious rituals. Contemporary ceramic art uses human, animal, and imaginary figures. The concept of Contemporary Art emerged in the 19th century with the advent of modernism, and the terms "Modern Art" and "Contemporary Art" were used interchangeably in Europe, America, and Turkey to describe the period. It is known that the word "modern" is also synonymous with "contemporary" in its Latin root meaning. This root meaning has led to confusion between the words "modern" and "contemporary." However, over time, the concept of "Contemporary Art" has also come to be used in place of the Postmodern Period. However, the concept of "Contemporary Art" does not describe a specific chronology. Rather than describing an era, it recalls Arthur Danto's expression "in the process of becoming" or French semiotician Roland Barthes' adaptation of German philosopher Nietzsche's statement, "the contemporary is timeless." In this context, Danto states the following about contemporary art: "Contemporary art must be the art produced by our contemporaries. This art will undoubtedly not yet have passed the test of time. Contemporary art shows what will happen after the end of periods in the grand narrative of art, rather than a period itself. Contemporary art points more to a style of using styles than to a style of producing art." In general, the concept of contemporary art refers to all art forms such as painting, sculpture, installation, photography, video art, and cinema art, created with today's understanding, ideas, and materials. The concept that emerged during the modern art process led to the profound impact of World War I and World War II on the art of the period, causing artists to move to America one by one and making New York the new art center of the period. Modern art practices, which began in Europe, were

transferred to New York with these migrations. The factors brought about by the new conditions resulting from these migrations led to the emergence of Conceptual Art and Postmodernism. In the following period, political developments once again caused significant and profound interactions in art.

Figure 1. Pablo Picasso, Femme a I'amphore, 1947, Ceramic Vase

Figure 2. Robert Arneson, Brick Bang, 1976, Ceramic Sculpture

Expressionism

The Expressionism movement first emerged in France in 1905 with Fauvism and in Germany with Die Brücke, beginning to manifest itself in many European countries during the same years, but finding its most distinct and influential expression in Germany. The term was first used in 1911 by Germans to describe the Fauvists and Cubists, who opposed the Impressionist movement and the copying of nature. Expressionism also tends to break

down taboos by approaching the ordinary and uniform rules of both society and art with a critical style. It is an art movement that aims to depict the outside world by adopting the artist's own unique attitude and form of expression. In the discourse of art, it first emerged in Europe in 1911 as an avant-garde art movement. "Expressionism," or "Expressionism" as it is also known, is an art and architecture movement that emerged in Europe in the early 20th century. In the field of Fine Arts, Expressionism, defined as a break from the Renaissance-era understanding of depicting nature, aims to express the artist's own feelings and inner world through color, line, plane, and mass. In order to reflect these emotions more powerfully and effectively, artists have widely used the method of distortion, moving away from concepts such as balance or beauty in design.

Expressive Approaches to Figures in Contemporary Ceramic Art

Melisa Cadell

The artist generally depicts sick people in an expressive manner through ceramic figures. In Cadel's work, "She Had Always Mended" (Image-27), she sought to convey the struggle of a sick woman in the final stages of her life to recover, and her pain, by mounting pearls on specific parts of her body in her ceramic sculpture for aesthetic purposes. Cadel has put forward the idea that, just as the genetic structure of animals and plants can be manipulated, by studying and correcting the DNA structures of humans, she could create various types on DNA and preserve them from carbon dioxide, thereby enabling new types and new living beings suitable for life on Mars to emerge, addressing diseases such as stroke and Alzheimer's, for which there is currently no definitive cure. Melisa Cadel has generally created exaggerated figures with distinct muscle structures and anatomies. Enriching her works by adding materials such as needles, thread, wax, and pearls, Cadel has succeeded in standing out with the aesthetic forms of expression she achieves through the balance and harmony in her works.

Figure 3. Melisa Cadell**,** She Had Always Mended, 2014**,** Ceramic Sculpture

Jhonson Tsang

Tsang has expressed his sensitivity to social events with powerful narrative skills in his works. His works also feature an extremely realistic style. Like many expressionist artists, Tsang has been influenced by the social and cultural conditions of his environment and has reflected his inner world quite powerfully in his works. Many of the artist's works highlight his desire to convey the problematic nature of the concepts of existence and innocence. By not specifying the exact gender of the figures in his works, it is understood that his approach refers to the whole world without making a distinction between male and female in human logic. Tsang has conveyed his messages using the simple human form, without any discrimination based on religion, language, or race.

Figure 4. Johnson Tsang, Lucid Dream Serisi - Duvara Karşı, 2021, Porcelain Sculpture

Personal Applications

Art has been one of the most effective means of expression for centuries. Supported by movements that emerged over time, it has developed, enriched itself by influencing artists' forms of expression using different materials in different ways in each period, and led to its emergence in many different disciplines today. Expressionism, in this context, has been a very effective movement in terms of human self-expression in every period. Figures that best express humanity, created using different materials, have been used by many artists. Contemporary ceramic artists have also produced numerous works, including ceramic sculptures, figurines, vases, plates, and tiles decorated with human and animal figures. Traces of many different movements can be seen in figurative ceramic art, which continues to this day. The Expressionism movement has been one of the most influential movements in terms of the form of expression used in figures in works of art since its emergence. The expressive narrative form, which directly addresses human emotions, is quite powerful in terms of directly conveying the artist's feelings to the viewer.

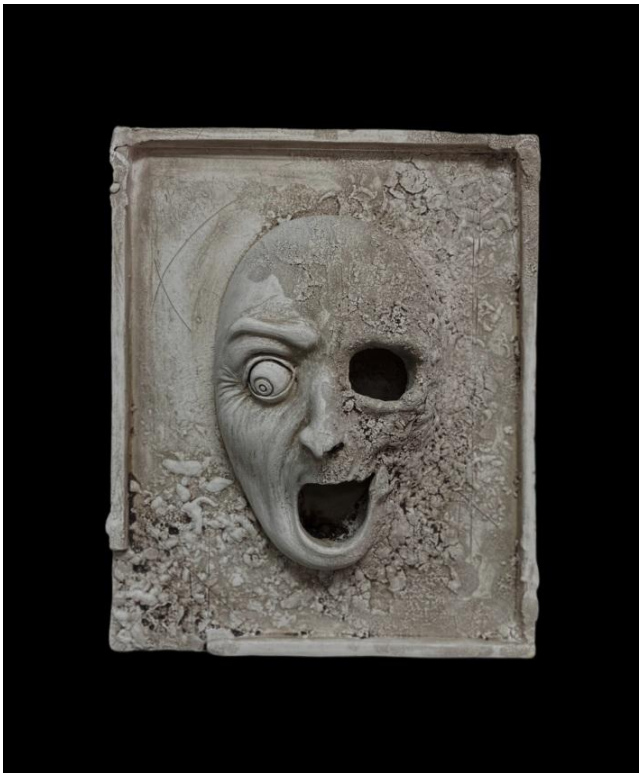

Figure 5. Mert İpek, “Uyanış”, 2024, Figurative Ceramic Relief

Figure 6. Mert İpek, “Yara Bandı”, 2024, Figurative Ceramic Relief

Figure 7. Mert İpek, “Mutant”, 2024, Figurative Ceramic Relief

Figure 8. Mert İpek,” Gaza”, 2024, Figurative Ceramic Relief

Figure 9. Mert İpek," Beyaz Yakalı", 2024, Figurative Ceramic Relief

This section features figures studied under the heading of Expressionism and Contemporary Ceramic Art, along with personal interpretations. Concepts such as human emotions, thoughts, anxieties, and mental states, as well as interpretations of the inner world, have been conveyed using ceramic materials.

Conclusions

In contemporary ceramic art, figurative expressionism has served as a vehicle for the artist to convey their inner world, social concerns, and personal experiences through a powerful plastic language. Strategies such as distortion of form, exaggeration, and emotional dispersion, which emerged in the early 20th century as part of the Expressionist movement, have been reinterpreted by contemporary ceramic artists to create a rich field of expression.

Melisa Cadell's ceramic sculptures, which present themes of illness and pain, are presented not as aesthetic objects but as surfaces bearing the traces of trauma and struggle. The artist's use of figurative ceramic language to address contemporary scientific debates such as DNA manipulation and genetic intervention demonstrates how the expressionist approach intersects with current issues. Johnson Tsang, meanwhile, combines social change with an exaggerated style to question the concepts of existence and innocence. The ambiguity of the figures' gender emphasizes the universal human experience, offering a narrative that transcends distinctions of religion, language, and race.

The figurative ceramic reliefs presented in personal applications demonstrate how the emotional and spiritual states of human beings can be concretized through ceramic material. Works such as "Awakening," "Band-Aid," "Mutant," "Gaza," and "White Collar" address the anxieties, traumas, and identity crises created by contemporary society. These works demonstrate that ceramic art does not merely produce aesthetic objects, but also provides a powerful platform for social criticism and existential questioning.

In conclusion, figurative expressionism in contemporary ceramic art continues the traditional legacy of Expressionism while engaging with current issues, maintaining its existence as a dynamic art practice. The plastic possibilities of ceramic material allow artists to powerfully convey their inner worlds and social critiques. In this context, figurative expressionism continues to make significant contributions to both the aesthetic and conceptual richness of contemporary ceramic art.

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Collective Critical Thinking: Conceptual Framework and Theoretical Foundations

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Abstract: Contemporary global challenges like climate change, pandemics, and social injustice require collaborative approaches that transcend individual critical thinking limitations. While existing literature focuses primarily on individual cognitive processes, the complexity of the information age demands socially embedded analytical frameworks. This research introduces "collective critical thinking"—structured, systematic collaborative analysis conducted by groups to address complex problems. The study aims to: (1) establish rigorous conceptual definitions distinguishing collective critical thinking from groupthink and collaborative learning; (2) develop a theoretically grounded multidimensional model; (3) identify philosophical, psychological, and pedagogical foundations; and (4) outline empirical validation pathways. The theoretical framework integrates Dewey's pragmatist philosophy, Bandura's social cognition theory, Hutchins's distributed cognition, Kahneman's dual-process theory, and Vygotsky's social development theory. Building on Facione's critical thinking dimensions, we propose seven collective dimensions: truth-seeking, analyticity, systematicity, open-mindedness, confidence, inquisitiveness, and cognitive maturity. Methodology employs multi-phase conceptual analysis, literature synthesis, and framework development, culminating in a Collective Critical Thinking Scale for empirical research. Expected outcomes include a comprehensive theoretical framework bridging individual and collective approaches, practical applications across educational, organizational, and societal contexts, and guidance for democratic participation and deliberative processes. This research addresses critical gaps in the literature by providing theoretically grounded frameworks for enhancing critical thinking through structured social interaction, contributing to more effective approaches for contemporary society's complex challenges.

Keywords: Collective critical thinking, group dynamics, social cognition, collaborative learning, Facione model

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Introduction

In the information age accelerated by globalization, humanity faces complex and multidimensional problems. Contemporary issues such as climate change, pandemic management, technological ethics, and social injustice exhibit a complexity that cannot be resolved through single-perspective approaches (Halpern, 2014). This

situation necessitates reconsidering the individual focus of traditional critical thinking approaches.

The critical thinking literature has primarily focused on individual cognitive processes and has given secondary consideration to the role of social interaction in these processes. While the classical critical thinking model developed by Facione (1990) defines six fundamental skills, such as analysis, evaluation, inference, interpretation, explanation, and self-regulation, it provides limited coverage of how these skills function in social contexts. Similarly, the critical thinking elements proposed by Paul and Elder (2019) present a framework based on individual mental processes.

However, the data abundance, echo chamber effects, and information pollution brought by the information age highlight the social dimensions of critical thinking. Research initiated by Woolley et al. (2010) with the concept of "collective intelligence" has empirically demonstrated that group performance exceeds the sum of individual intelligence. These findings reveal that critical thinking processes should also be addressed collectively.

Studies in education show that students develop higher levels of critical thinking skills in collaborative learning environments (Johnson & Johnson, 2014). Organizational psychology literature emphasizes that team-based decision-making processes can produce more effective results than individual decision-making, but this requires certain conditions (Edmondson, 2019). Psychological safety, cognitive diversity, and structured interaction processes are among the factors that contribute to these conditions.

This study aims to define the concept of "collective critical thinking," establish its theoretical framework, and reveal the contributions this concept will make to critical thinking literature. The potential that the concept offers in democratic participation processes, educational applications, and organizational learning areas underscores the importance of this research.

Conceptual Definition

Collective critical thinking is "a higher-order thinking process that emerges through the critical evaluation and synthesis of individual perspectives, conducted by two or more people within a structured social interaction process to analyze a common problem, situation, or topic systematically." This definition emphasizes five fundamental characteristics of the concept: social interaction, structure, systematicity, critical evaluation, and synthetic nature.

In current literature, collective critical thinking is addressed in different contexts. Nathanson (2023) defines the concept in educational contexts as "the critical analysis process that students conduct together in classroom environments," particularly emphasizing evaluating different perspectives and developing new familiar narratives in group dialogues discussing racial narratives. Zhou et al. (2025) address the concept within sustainable development education as "the ability of participants to evaluate with a critical perspective together in situations requiring institutional and social practice questioning and social change." Khojasteh et al. (2025)

define it in medical education contexts as "a collective critical evaluation activity that emerges when discussing as a team" in AI-supported writing processes, while Hryn et al. (2024) operationalize the concept in project-based learning processes as "a collective critical thinking activity that emerges through students' mutual discussion and feedback."

Collective critical thinking differs from individual critical thinking in several fundamental ways. First, its multi-perspectival characteristic overcomes the limitations of single viewpoints and provides an epistemically richer approach to the subject. This situation supports the phenomenon called "cognitive diversity advantage" (Page, 2017). Second, the interactive validation process allows individuals to test, develop, and refine their arguments in real-time within the group. This process evokes Habermas's (1984) concept of communicative reason and carries the potential for consensus formation through rational discussion.

Third, the distributed cognitive load principle allows complex problems to be shared among group members, enabling each individual to focus on their expertise. This situation can be evaluated as applying the "distributed cognition" theory defined by Hutchins (1995) to the field of critical thinking. Fourth, the social accountability mechanism contributes to group members conducting their thinking processes more carefully and responsibly. Fifth, the collective dimension of meta-cognitive awareness enables the group to reflect on its thinking processes.

Current empirical studies also support these differences. Hryn et al. (2024) reported that students' "individual and collective critical thinking" skills developed in project-based learning processes, and a significant increase in critical thinking levels was observed in the experimental group. These findings show that collective processes also support individual critical thinking capacity.

Making distinctions from similar concepts is critically important for clearly understanding the concept. Collective critical thinking differs from groupthink, defined by Irving Janis (1982), by emphasizing structural criticality and diversity. At the same time, groupthink is a pathological situation where the focus on maintaining group harmony prevents critical evaluation, collective critical thinking, and, on the contrary, places criticality at the center of group dynamics.

It differs from the concept of collective intelligence through its focus on systematic questioning and critical analysis. While Surowiecki's (2004) "wisdom of crowds" approach suggests that the average predictions by large numbers of independent individuals can yield correct results, collective critical thinking emphasizes an interactive and structured process. It differs from collaborative learning through its critical analysis-centered approach. While collaborative learning generally aims to optimize learning outcomes, collective critical thinking specifically aims to improve the quality of critical analysis.

These distinctions are also clearly seen in current studies. Zhou et al. (2025) address collective critical thinking differently from collaborative learning and reflective learning with its "critical questioning of institutional and

social practices in situations requiring social change" dimension, emphasizing the concept's social transformation focus. Nathanson (2023) states that, unlike group discussion, the concept requires a "structured classroom conversation model" and that this process contributes to students experiencing empowering transformation.

Theoretical Framework

The theoretical foundations of collective critical thinking are shaped through a multidisciplinary approach based on three main perspectives. These perspectives form the theoretical infrastructure supporting the concept's epistemological, psychological, and pedagogical dimensions.

Philosophical and Epistemological Foundations

John Dewey's pragmatist approach forms the philosophical foundation of collective critical thinking. Dewey (1938) argued that democracy as a way of life requires a collaborative inquiry process and that the community's collective intelligence exceeds individual capacity. In his work "Democracy and Education" (1916), he emphasized that educational processes occur through social interaction and that individuals can reach their full potential within a community.

From a social epistemology perspective, the approaches developed by Goldman (1999) and Goldman & O'Connor (2021) reveal that social construction processes shape knowledge and that critical evaluation occurs in social contexts. According to this view, interactions within epistemic communities have the potential to produce more reliable and valid results than individual cognitive processes.

Paulo Freire's (1970) dialogical pedagogy approach emphasizes that critical thinking develops through social dialogue. Freire argued in his "problem-posing education" model that students' collective analysis of real-world problems can create individual and social transformation. This approach supports the emancipatory potential of collective critical thinking.

Psychological and Cognitive Foundations

Albert Bandura's social cognition theory forms the psychological foundations of collective critical thinking. According to this theory, learning occurs through social interaction, and individuals learn from other people in their environment through observation, imitation, and social reinforcement (Bandura, 1991). The principle of vicarious learning is critically important for group members to develop their skills by observing others' critical thinking processes.

The distributed cognition approach developed by Edwin Hutchins (1995) reveals that cognitive processes occur not only within individual brains but in a distributed manner with social and technological tools. In his work

"Cognition in the Wild," he analyzed ship crew navigation processes to show how complex cognitive tasks can be successfully performed in groups. This approach supports the idea that collective critical thinking processes can focus on more complex problems by distributing cognitive load among group members. Kurt Lewin's field theory explains the effect of group dynamics on individual behavior and thought. Lewin (1951) formulated that individuals' behaviors depend not only on their characteristics but also on the social field they are in (B = f(P, E)). This theory is important for understanding how group dynamics can affect individual critical capacity in collective critical thinking processes.

Daniel Kahneman's (2011) dual-process theory explains that thinking processes are done through two systems. According to this, System 1 represents fast, intuitive, and automatic processing, while System 2 refers to slow, analytical, and conscious cognitive processes. Critical thinking, by its nature, mostly requires the activation of System 2, as it involves individuals engaging in cognitive processes such as reasoning, evaluating evidence, comparing alternatives, and questioning biases. In collective contexts, group interactions have the potential to slow down the fast and intuitive System 1 tendencies that may dominate individual thinking. Particularly, discussion, idea sharing, and mutual questioning processes encourage individuals to exert more cognitive effort, promoting the engagement of analytical thinking (System 2). Additionally, the emergence of different perspectives creates cognitive conflict, directing individuals toward deeper reasoning rather than being satisfied with intuitive responses. From this perspective, collective critical thinking can be evaluated not merely as the sum of individual cognitive processes but as a structure that emerges through group dynamics, balancing intuitive thinking and activating higher-level analytical thinking.

Educational Sciences and Learning Theory Foundations

Lev Vygotsky's social development theory strengthens the educational foundations of collective critical thinking. The Zone of Proximal Development (ZPD) concept shows that individuals in collective critical thinking can exceed their capacities through group interaction. Vygotsky (1978) explained how social interaction supports learning with the concept of "more knowledgeable other."

The collaborative learning model developed by David Johnson and Roger Johnson (2014) empirically supports that structured group processes improve learning quality. Five fundamental elements—positive interdependence, individual accountability, face-to-face interaction, social skills, and evaluation of group processes—also guide collective critical thinking processes.

The Communities of Inquiry (CoI) model is an approach developed by Garrison, Anderson, and Archer (2001) that provides a practical framework for developing critical thinking within communities. This three-dimensional model, consisting of social presence, teaching presence, and cognitive presence, supports collective critical thinking in both online and face-to-face environments.

Matthew Lipman's (2003) "Philosophy for Children" (P4C) approach presents a pedagogical model that supports

children's philosophical inquiry processes as a community. This approach, centering the community of inquiry, shows how collective critical thinking can be developed at an early age.

Conceptual Model and Dimensions

The collective critical thinking conceptual model is built on seven fundamental dimensions adapted to social contexts, inspired by Facione's (1990, 2015) individual critical thinking dimensions. These dimensions reveal how individual critical thinking skills are transformed and developed within group dynamics.

Collective Truth-seeking (Truth-seeking in Collaboration)

This dimension encompasses group members' common motivation to find the objective truth and their collaborative efforts in this direction. While "truth-seeking" in individual critical thinking refers to a person's willingness to search for correct information, in the collective dimension, this motivation is shaped and strengthened within group dynamics. Group members question the data presented by colleagues, try to find the most accurate information by listening to different perspectives, and collectively analyze evidence before reaching definitive judgments.

Collective Analyticity (Collective Analyticity)

Collective analyticity refers to systematic analysis processes conducted as a group. This dimension encompasses the division of complex problems among group members, optimization of each member's analytical capacity, and synthesis of analysis results within the group. Analyzing processes with colleagues, addressing issues within a logical framework, and making evidence-based rather than intuitive decisions are fundamental indicators of this dimension.

Collective Systematicity (Systematicity in Group Thinking)

This dimension emphasizes the systematic and organized conduct of group thinking processes. This concept, the collective adaptation of Facione's "systematicity" dimension, means that the group organizes thinking processes regularly, planned, and consistently (Facione, 1990). Systematically addressing topics as a team, progressing in a planned rather than random manner, and making everyday decisions within a specific logical framework are characteristic features of this dimension.

Collective Open-mindedness (Open-mindedness in Team Discussions)

Collective open-mindedness refers to group members being open to each other's views and consciously minimizing prejudices. This dimension encompasses embracing diversity between groups as a value, actively seeking different perspectives, and being open to arguments that challenge one's views. Understanding

colleagues' opinions even when they contradict one's thoughts and efforts to reduce intra-group prejudices are fundamental indicators of this dimension.

Collective Confidence (Confidence in Collective Critical Thinking)

This dimension encompasses group members' confidence in collective critical thinking processes and active participation. In addition to individual critical thinking confidence, engaging in critical discussions as a group, expressing opinions without hesitation, and believing that collective processes will produce valuable results are fundamental elements of this dimension.

Collective Inquisitiveness (Collective Inquisitiveness)

Collective inquisitiveness refers to the common motivation of group members to discover new information together, research different approaches, and develop creative solutions. This dimension reveals how epistemic curiosity functions in social dimensions and how group dynamics support individual curiosity. Learning and discussing new approaches together, researching different methods as a team, and collectively reasoning about the future are characteristics of this dimension.

Collective Cognitive Maturity (Cognitive Maturity in Group Thinking)

This dimension encompasses group members' ability to maintain emotional control in critical thinking processes, provide constructive feedback, and avoid dogmatic attitudes. Making logical discussions rather than emotional reactions in disagreements, providing constructive feedback to each other, and not insisting that only one's view is correct are fundamental indicators of this dimension.

Process Dimensions

The conceptual model also defines four main stages in the process dimension: In the preparation stage, the problem is defined, relevant information is collected, and group members complete their preparations. In the interaction stage, perspective sharing, systematic questioning, and structured discussion occur. In the evaluation stage, different views are synthesized, verification processes are operated, and collective decision-making occurs. In the reflection stage, process evaluation and learning inferences are made.

Quality Criteria

The model offers three-dimensional criteria for evaluating collective critical thinking quality. Epistemic criteria include accuracy, validity, and reliability standards; social criteria include inclusiveness, fairness, and participatory principles; procedural criteria include systematicity, transparency, and accountability requirements.

Recommendations

This research aims to define the concept of collective critical thinking and strongly integrate the social dimension into critical thinking literature. The theoretical framework of the concept is built on the synthesis of pragmatist philosophy, social cognition theory, and constructivist learning approaches. It is enriched by adapting Facione's critical thinking dimensions to social contexts.

The seven-dimensional conceptual model presents a holistic approach considering individual and social factors. This model shows that critical thinking is not merely an individual skill, but is shaped within social interaction and can be strengthened through collective processes.

Conceptual Contributions

The fundamental contributions of this study to critical thinking literature can be summarized as follows: First, enrichment of the theoretical framework was achieved through expanding individually-focused critical thinking approaches in social dimensions. Second, new dimensions were gained through adapting Facione's classical model to social contexts. Third, an interdisciplinary approach was adopted by building bridges between collective intelligence literature and critical thinking literature.

Application Potential

The application potential of the concept can be evaluated across a vast spectrum. In educational contexts, classroom discussion circles, peer evaluation processes, online collaborative learning platforms, and problem-based learning applications can support collective critical thinking. Teacher education can be applied through professional learning communities and collaborative action research. At the organizational level, it can be used in strategic planning processes, problem-solving teams, innovation laboratories, and crisis management applications. In societal contexts, it can contribute valuable information to citizen juries, deliberative democracy applications, participatory budgeting processes, and media literacy projects.

Measurement Tool Development Need

Valid and reliable measurement tools are needed for the concept of collective critical thinking to be used in empirical research. In this context, developing a "Collective Critical Thinking Scale" that can measure the seven dimensions of the concept is critically important.

The proposed scale should be designed to cover the dimensions of collective truth-seeking, collective analyticity, collective systematicity, collective open-mindedness, collective confidence, collective inquisitiveness, and collective cognitive maturity. Items developed for each dimension should measure participants' behaviors, attitudes, and beliefs in group critical thinking processes.

Creating an item pool, obtaining expert opinions, conducting pilot applications, and examining psychometric properties are necessary for scale development. Construct validity, criterion-dependent validity, and discriminant validity analyses should be conducted in validity studies. In terms of reliability, internal consistency, test-retest reliability, and split-half reliability should be examined.

Future Research Recommendations

Priority areas for future research can be listed as follows: Empirical validation studies are needed to test the concept's validity. Experimental and quasi-experimental research examining the effects of collective critical thinking interventions on individual and group performance should be conducted. Developing valid and reliable tools that can measure the level of collective critical thinking is critically important. These tools should be designed in self-assessment and observer assessment formats and adapted for different age groups and cultural contexts.

Cross-cultural research should examine how the concept functions in different cultural contexts. Differences in collectivist and individualist cultures and the effects of cultural values on collective critical thinking processes should be investigated. Technology integration should examine how digital technologies can support collective critical thinking processes.

The effects of virtual reality, AI-supported facilitation tools, and online collaboration platforms should be researched. Neuro-cognitive research should examine how brain activities change during group critical thinking processes, and the effects of neural synchronization and group cohesion on cognitive processes should be investigated. Longitudinal studies should research how collective critical thinking skills, long-term effects, and sustainability factors develop over time.

Interdisciplinary Collaboration Opportunities

A multidisciplinary approach is needed to develop the collective critical thinking concept: Computer Science and Artificial Intelligence can develop AI algorithms supporting collective critical thinking processes, natural language processing techniques, and intelligent facilitation systems. Large language models can detect bias in group discussions and provide objective perspectives. Sociology and Anthropology can examine the effect of social dynamics on collective thinking processes, the role of cultural factors, and applications of social identity theory. Different social groups' critical thinking approaches can be analyzed comparatively.

Organizational Psychology can research factors hindering collective critical thinking in workplaces, the effect of leadership styles, and the role of organizational culture. Relationships between team performance and decision-making quality can be examined. Neuroscience can research how the nervous system works in group thinking processes, the role of the social brain in critical analysis processes, and the neural foundations of group synchronization.

Practical Application Recommendations

For Educators: Designing activities that support collective critical thinking in classroom environments, creating psychological safety environments in student groups, developing classroom cultures that value different perspectives, and integrating meta-cognitive reflection processes into group activities are essential. For Organizations: Implementing structured critical analysis processes in team meetings, developing policies supporting diversity and inclusion, minimizing adverse effects of hierarchical structures on critical thinking, and using collective critical thinking methodologies in innovation processes are recommended. For Policy Makers: Applying collective critical thinking principles in participatory democracy processes, designing policy development processes that increase citizen participation, supporting collective verification processes in media literacy education, and creating platforms that strengthen social dialogue are important considerations.

Limitations and Critical Evaluation

This study has some limitations. First, the conceptual model has not yet undergone empirical validation and remains at the theoretical level. Second, the effect of cultural factors has not been addressed in sufficient depth. Third, the operational definition of the concept has not yet been clarified, and brings measurement difficulties. Additionally, potential risks such as collective processes not consistently exceeding individual performance, group dynamics potentially hindering critical thinking in some cases, and high time and resource requirements should be considered.

Conclusion

The concept of collective critical thinking presents a social interaction-focused approach that aims to go beyond individual capacities in producing solutions to today's complex problems. The seven-dimensional model inspired by Facione's critical thinking dimensions strengthens the theoretical foundations of the concept. This research expands critical thinking literature in social dimensions, emphasizing the positive effects of group dynamics and collaborative processes on critical analysis quality. Applying the concept in educational, organizational, and societal contexts can contribute to developing critical thinking skills at both individual and collective levels. Future research should focus on empirical validation of the concept, development of measurement tools, and examination of applications in different contexts. The "Collective Critical Thinking Scale" developed in this context is critically important for operationalizing and using the concept in empirical research.

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Financial Considerations for Accommodation and Access Services in Four-Year Public Universities

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Abstract: This research explores the economical and institutional challenges associated with providing the Office for Accommodations and Access (OAA), formerly Disability Support Services (DSS) a streamlined, effective operating approach. Southern Illinois University Carbondale (SIUC) is utilized as a practical case study for this research project. As student groups with a myriad of challenges grow, institutions face unwavering constraints in delivering equitable accommodation such as increased testing time, interpreter services, and other forms of tutoring services—many of these attach exorbitant costs. The research examines the broader context of disability services in higher education, including legal rules and regulations, different types of disabilities, and disparities in service access and delivery. Most of the time, the constraints may deal with financial constraints or issues with access of services. The impact of COVID-19 on service delivery is a realization and sheds light within lack of accessibility and communication. Many policy-driven recommendations are discovered for improving service coordination, opening doors for communication, developing and building staff training, and creating a diverse stance of providing college students with creative campus protocol and how to equitably receive these valuable services. Students must serve as their own advocates while encouraging higher education institutions to adopt more global, inclusive, and solid financial practices.

Keywords: American with Disabilities Act (ADA); physical disabilities; mental disabilities; access; accommodations

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Introduction

Throughout the years, many students have received assistance through Office for Access and Accommodations (OAA) on Southern Illinois University's (SIU) campus. Dental hygiene students have reported they need help with testing accommodation such as increased time for quizzes and/or exams, or more recently, interpreter services. Interpreter services were a large financial investment to help satisfy the accommodation for students who are deaf and hard of hearing. These types of accommodations were usually covered primarily by federal dollars in SIU's fiscal budget. In addition, the staff at OAA must stay diligent and organized to schedule hundreds of student accommodations daily. This paper will discuss the overview of the issue, the place within higher education, the impact on institutional function and serving students, adjustments made in the past because

of COVID-19, and suggestions for states and institutions to alter and/or improve service delivery.

Overview of the Issue

Students with disabilities are attending colleges and universities at increasing rates, yet little is known about the costs they experience compared to their peers. Postsecondary students with disabilities are entitled to academic accommodations under the auspices of the *American with Disabilities Act (ADA)* Amendments Act (2008) and Section 504 of the *Rehabilitation Act* (1973) (Cohen, et al., 2020; Singh, 2019). The *Individuals with Disabilities Education Act* (IDEA) establishes educational protections, processes, and rights for students with disabilities and their families to ensure educational equity (Jameson, Stegenga, Ryan, & Green, 2020). During the 2009-10 through 2019-20 school year, the number of students who were served by the IDEA increased from 6.5 million to 7.3 million (U.S. Department of Education, 2021). The IDEA consideration does not transfer to postsecondary education, but the ADA and Rehabilitation Act covers public colleges and universities. All adaptive resources should be in place and the learning environment mimics the day-to-day operation of the normal classroom.

It is important to discover the differences between physical disabilities and learning disabilities. Students with physical disabilities may have difficulty seeing instructional material, hearing lectures or speakers, or managing chronic pain during the semester. Students with learning disabilities may have trouble with reading comprehension, math problem-solving, or cognitive problem-solving during examinations as well as difficulty with time provided to take exams (Cohen et al., 2020). More students have been diagnosed with attention-deficit hyperactivity disorder (ADHD) and may struggle with taking copious notes, time management skills, and turning assignments in to faculty in a timely manner (Cohen et al., 2020; American Psychiatric Association, 2013; Lewandowski, Lovett, & Gordon, 2017).

The Place Within Higher Education

Between 11.6% and 21.9% of undergraduates report having at least one disability, most commonly ADHD, anxiety and mood disorders, specific learning disabilities, and physical or health related problems (Cohen et al., 2020; Bryan, Cooney, Elliott, & Richards, 2019; Eagan et al., 2017; Radwin et al., 2018). These percentages above show a need, however, a much lower percentage self-report their disability or submit medical documentation to disclose the need for accommodations. On reason for the lower access may be the shift of responsibility for identifying disability support services from the K-12 schools to the student in postsecondary settings (Kurth & Mellard, n.d.; Richard, 1995). Some students feel they no longer need the same accommodation they had in K-12 education (Cohen et al., 2020).

Students attending four-year institutions in the United States experience higher financial, social, and emotional costs, resulting in disparate experiences of belonging, engagement, and support (Fox et al., 2021). Many students face daily challenges due to being away from home for the first time, difficulty navigating OAA, or a

sense of alienation and stigma. As a faculty member, it is very challenging because if students are in the classroom or lab and need accommodation(s) and do not receive them, their short or long-term success may be diminished, and frustration of faculty and students may develop. Faculty may notice that students require extra help and/or tutoring and suggest an appointment with OAA for guidance and help.

In some instances, students and their families must help fund "extra" support services, and this creates a financial burden or increased long term debt for the family. Costs of support services can range from about $1,300 to more than $13,000 per academic year per student, depending on the school and program. Tutoring and other support services range from $1,350 to $2,800 per semester for comprehensive services such as unlimited tutoring. If students request more programmatic needs for tutoring, most universities have program tutors (current students in the program) that can be paid for their services. Private universities may have more access and accommodation services for students than public universities. Students must be proactive in investigating each potential higher education institution for services offered and costs associated with providing more personalized accommodations. Need-based scholarships may be available to help offset personal expenses associated with tutoring or other accommodations (Powell, 2016).

Students with disabilities must pay more to attend college because the cost of living may be greater (due to personal care assistant or adaptive equipment), paying for support services that exceed what the institution covers, or a longer time frame to complete their degree. The burden of advocacy may fall on the students because they are attempting to navigate outdated websites and/or unable to have financial concerns addressed by OAA staff. This is extremely difficult because most students who have a disability incur more debt, and their family may be in a lower income bracket. Students must have the knowledge and proper information provided by OAA staff so some expenses may be included in financial aid packages. Additionally, Obama era professional judgment guidance has been rescinded as of June 2020, which makes financial aid administrators more hesitant to offer aid adjustments, even for well justified reasons such as a disability (Perlow et al., 2021; Turner & Nadworny, 2020). A reduction in course load (less than 12 credit hours) can lessen the amount of student aid one receives. Loan borrowing limits must be conveyed clearly to students with disabilities so they can make informed decisions for future success. Increasing student access to federal funding may create a better enrollment and retention strategy (Perlow, et al., 2021).

The Impact on Institutional Function and Serving Students

The OAA provides academic advising, tutoring, career planning, and/or college transfer services. These services must be trackable through clear and concise web-based information. If students are not aware of the services provided or they feel a lack of sensitivity from professors and school personnel at the institution, this can be a continual barrier for students with disabilities. Many personal struggles for students may arise such as a lack of studying skills, financial barriers, learning a new and more complicated system, and being a part of a less intimate campus at a university setting (Burgstahler & Crawford, 2001).

The purpose of OAA is to assist students' communication with professors, have accommodation properly documented, and advocate their needs on campus (Brown, 2019; Szymanski et al, 1999). OAA programs discover issues such as documentation fraud, difficulty defining reasonable accommodation(s), discrimination, and professor stigmatization. Very little information is available about the effectiveness of these departments within higher education (Brown, 2019).

Students with disabilities have issues with a sense of belonging, access to academic information, support for independence, and labeling disabilities as they relate to discrimination. In addition, students' expression or their willingness to work through the difficulties they encounter is a daily struggle (Kurth & Mellard, n.d.). Some students often opt out of identifying themselves as disabled to receive help from peers, professors, or departments on camps due to the stigmatizing effects the label holds within society (Brown, 2019; Lam, 2015).

Several Adjustments Made Because of COVID-19

Many students with disabilities struggled with the fast transition between in-person instruction to remote learning. Young people with disabilities generally perform better when their routines and supportive environments are maintained. Links to online services that are available to students and faculty will help to maintain normalcy. Contact information to the counseling centers and student health services are imperative to maintain physical and mental well-being (Meleo-Erwin et al., 2021).

My personal experience reflects the need for conversations with key members of the campus community to improve technology and update websites/links. Many links do not work and there are too many clicks that must happen to go to inaccurate information. This creates frustration for anyone on campus and potential students and parents who may try to navigate our university's webpage.

Suggestions for States and Institutions to Alter and/or Improve Service Delivery

- Public colleges should be more proactive in identifying and accommodating students with disabilities (Cohen et al., 2020)
- Be able to investigate services in an effective way via web or personal contact
- Smoother transition for students from high school, two-year colleges, and four-year institutions
- Coordinate knowledge of staff about OAA that is necessary for success
- Effective communication between OAA staff and faculty for a smoother transition in courses and activities within the different majors and/or programs
- Collaborate with two-year and four-year institution staff and have joint student fairs to share ideas and obtain feedback from institutions and students (Burgstahler & Crawford, 2001)
- Prepare faculty to work with students with disabilities and be compassionate and understanding with their individual needs and accommodations
- Four-year public universities must pave the way to empower students with disabilities and educate

others regarding disabilities in everyday life

- Students should be powerful advocates and change agents for their own destiny within higher education. It helps if university liaisons listen to students regarding their experiences and guide them through the appropriate accommodation process. More focus should be on contextual and functional needs rather than the student's actual disability (Kurth & Mellard, n.d.)
- Evaluate students with disabilities on a case-by-case basis to fully understand the extent of their personal challenges and needs
- Restructure adaptive/assistant accommodations such as a scribe or reader (due to exorbitant costs and decreased benefit to the student) to include the development of personal skills and greater independence (Kurth & Mellard, n.d.)
- Improve university websites to include ADA compliant information that is accurate, inclusive for all disabilities, concise, and helpful
- It is helpful to add direct links to financial aid departments for fewer potential mistakes
- Financial aid staff should be well versed to all aspects of navigating the system for students with disabilities
- Financial aid packages can be adjusted to acquire disability-related expenses and reducing credit hours may reduce aid they can receive later in their academic career (Perlow et al., 2021)
- Discuss the specific needs with students so OAA staff can grasp the levels of concerns
- Partners with a specific OAA staff member will create synergy and build trust
- Students who are first-generation college students or from social-culturally diverse backgrounds may lack the information needed to seek or obtain access and accommodation services (Cohen et al., 2020; Lombardi, Murray, & Gerdes, 2012; Sirici, Banda, & Wells, 2019).

More students with disabilities are attending universities across the country. Higher education institutions must do a better job accommodating students. Faculty must be aware of the specific needs of their students and try to collaborate with OAA to provide the best educational experience possible. Collaboration and effective communication begin with faculty and staff in K-12 education. OAA must stay abreast of current laws associated with students with disabilities and provide accommodations students need for success at the university level. OAA should maintain links and provide accurate and easier navigation for all educational and financial aid links. COVID-19 has taught us how unprepared and behind we are when it comes to addressing all student and faculty needs. More groups on campus must work together as a team to help make the process more streamlined and less stressful for students, faculty, administrators, and staff. Good communication and listening skills are critical to the process, and we can learn so much from students that survive through accommodation issues every day.

Since the initial research was completed, many new upgrades and advancements have occurred at SIU's OAA office. The website has improved with a better online instructor portal for downloading quizzes and exams, and to schedule specific time frames for testing services. As far as the student portal, OAA encourages students to

reach out as early as they can to investigate possible accommodation services and to make appointments to visit staff members while they are on campus for open houses or tours. They encourage students to submit paperwork to determine the type of disabilities and what services are available on campus. Students can complete the application process online. The learning experience may improve by requesting alternative textbook formatting, alternative testing format through the portal or on the learning management system, Desire 2 Learn (D2L). Notetakers may be secured to help students with comprehension of course content and streamline learning techniques.

The process of documenting disabilities has improved due to offering examples of what disabilities are accepted and how it should be documented. Faculty and students are alerted to timeframes for scheduling alternate testing. Internal step-by-step pictures and tutorials of the registration process are available online to help both students and faculty.

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A Semiotic Analysis of Yayoi Kusama's Work "The Souls of Millions of Light Years Away"

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Abstract: The research analyzes Japanese contemporary artist Yayoi Kusama's installation work, "The Souls of Millions of Light Years Away," using a semiotic approach. Shaped by the artist's personal experiences, particularly her obsessive hallucinations, this work creates a multi-layered field of meaning through its interaction with the viewer. The main objective of the study is to examine how the concept of "infinity," frequently encountered in Kusama's artistic practice, is structured in the context of space, object, and viewer interaction. Semiotic analysis techniques were used as the method, and the work was evaluated on three levels: the descriptive level of form and material properties; the narrative level of the relationship between the work and the viewer; and the thematic level of the work's philosophical and existential themes. During this analysis, theoretical tools such as Greimas's actantial model, Barthes's levels of signs, and the approach of fundamental oppositions were utilized. The analysis of the work revealed how elements such as light bulbs, mirrors, water, and the use of color function not only as visual but also as conceptual signs. The theme of "spots" in Kusama's art is reinterpreted in this work through LED bulbs; each point of light becomes a symbol of a spirit. The multiple reflections created by mirrors in the space and the soft reflectivity of the water surface allow the viewer to encounter their own existence, enabling them to question their place in the universe. The work demonstrates that Kusama's piece is not merely a visual aesthetic, but also establishes a structure that offers an existential experience, placing the viewer in the position of subject. In this context, the viewer is no longer just an individual observing the art object, but becomes integrated into the internal order of the work. The artist's strategy of creating a sense of infinity in a limited physical space, reducing the individual to "a single point," is a powerful production of meaning from a semiotic perspective. Consequently, this study evaluates the installation titled "Spirits a Million Light Years Away" in terms of both its aesthetic and semantic layers; it positions Kusama's art not only as an expression based on personal trauma, but also as a system that produces meaning within the context of contemporary art.

Keywords: Contemporary Art, Installation Art, Semiotic Analysis.

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Introduction

Japanese contemporary artist Yayoi Kusama (b. 1929) has placed the obsessive hallucinations she has experienced since childhood at the center of her artistic production, transforming her personal pathology into a universal language. “Mental disorders that began in her childhood caused her to see flowers, nets, but mainly dots everywhere as hallucinations, and for Kusama, everything started at this point” (Heartney, 2008: 196). The artist's experience of “seeing dots everywhere” has evolved from being merely a mental symptom into a powerful plastic language that questions the concept of infinity. Kusama's 2013 installation, “The Souls of Millions of Light Years Away,” presents one of the most mature examples of this language.on Art, Semiotic Analysis.

Figure 1. Yayoi Kusama

Installation art, beginning with Marcel Duchamp's ready-made objects, has redefined the relationship between the object and the space; it has removed the viewer from the position of passive observer and included them in the internal order of the work (Boynudelik, 1999). “In object placement, the aim is not so much to exhibit the selected object as a sign within a space with specific concerns, but rather to make the space itself the living area for this work” (Özayten, 1997). Kusama's mirrored rooms, in this context, position the space not only as an exhibition area, but as an active subject where meaning is produced.

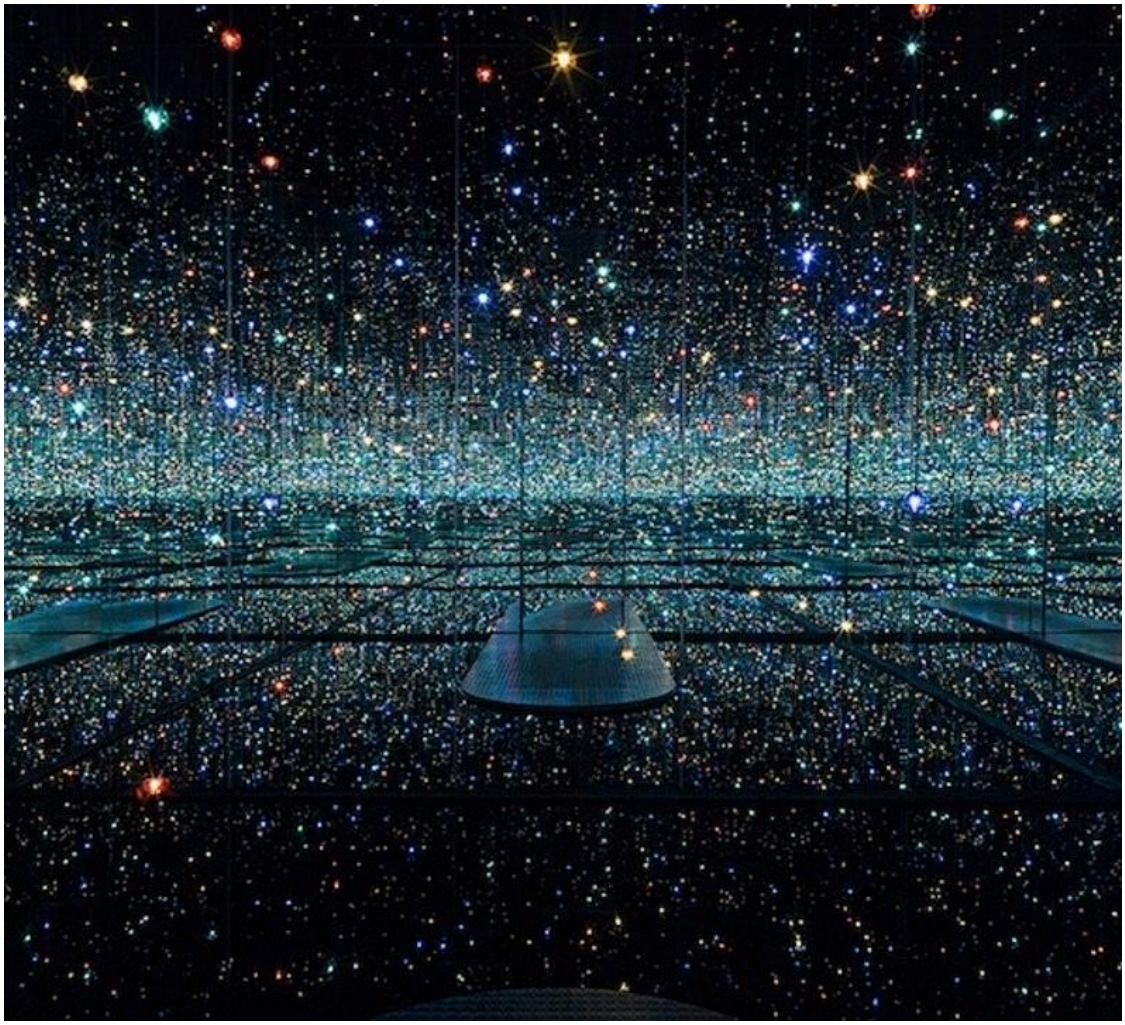

Figure 2. Yayoi Kusama, The Souls of Millions of Light Years Away, 2013,
David Zwirner Gallery, NEW YORK / ABD

Materials used: wood, metal, glass mirrors, plastic, acrylic panels, rubber, LED lighting system, acrylic balls, and water

This study aims to analyze the work “Souls Millions of Light-Years Away” using semiotic methods. Based on Roland Barthes' levels of signs and A.J. Greimas' actantial model, the study will examine how the work constructs a system of meaning in terms of material, space, and audience interaction on three levels: descriptive, narrative, and thematic. The central question of the research is how Kusama structures the concept of “infinity” within physical limitations and how she involves the viewer in this process of meaning production.

Theoretical Framework

Semiotics is the discipline that studies how signs produce meaning. According to Roland Barthes, a sign operates on two levels: denotation refers to the sign's objective referent, while connotation expresses cultural and subjective associations. In this context, the work of art functions as a system of signs and produces multi-

layered meanings in interaction with the viewer. A.J. Greimas's functional model analyzes narrative structures through six basic functions: sender, object, receiver, subject, helper, and inhibitor. This model presents the semantic structure of the artwork as a network of dynamic relationships. In installation art, these functions are reconfigured within the triangle of space, material, and viewer. The semiotic analysis of installation art treats the work not merely as a visual object but as a spatial experience and a process of meaning production. According to Yerce (2007: 3), installation can be defined as "the placement of an object or group of objects in a 'place', i.e., placement, or the influencing of an object or group of objects located in a 'place', i.e., arrangement." This definition emphasizes that space ceases to be a passive ground and becomes an active signifier.

Artwork Analysis

Descriptive Level

The installation "Spirits Millions of Light-Years Away" is designed as a square room measuring 287.66 x 415.29 x 415.29 cm. The work, exhibited at David Zwirner Gallery (New York), consists of materials such as wood, metal, glass mirrors, plastic, acrylic panels, rubber, LED lighting system, acrylic balls, and water.

Figure 3.

Figure 4.

Figure 5.

The walls of the space are covered with mirrors, and a shallow pool has been created on the floor. At the entrance, there is a metal platform where the viewer can stand. LED bulbs of varying lengths hang from the ceiling, emitting light in blue, red, green, and yellow; blue is used most intensely. "The room is completely covered with mirrors and has a shallow pool on the floor. This dark space is faintly illuminated by hundreds of LED bulbs suspended in the air, emitting red, yellow, green, and blue light. The mirrors and pool multiply the light reflections infinitely" (Bell, 2012: 82).

Figure 6.

Figure 7.

LED bulbs are a three-dimensional interpretation of the spots Kusama used in her previous paintings. The infinite dots the artist saw in her hallucinations transform into a light source in this installation, filling the space. Mirrors and water enhance the effect of infinity with their reflective function.

Table 1. Indicator-Meaning Table

indicator	literal meaning	secondary meaning
LED Bulb	Light source, inanimate object	Spirit, speck, existence
Mirrors	Reflective surface, inanimate	Infinity, multiplicity
Room	Indoor space, inanimate	Universe, world
Water	Liquid compound, inanimate	Purity, infinity
Blue	Color	Peace, spaciousness
Red	Color	Dynamism, liveliness

In the work, the viewer is not an observer outside the piece, but an element positioned within it. The 30-second time constraint intensifies the experience and keeps the viewer in the "now."

Narrative Level

The narrative structure of the work functions as follows within the framework of Greimas's actantial model:

Figure 8.

Communication Axis (Sender-Object-Receiver)

Kusama's hallucinations take on the communicative function of the work. The artist conveys the experience of infinity as follows: "One day I was sitting at a table with a red floral pattern. The huge sun on the horizon was shining brightly. When I looked elsewhere, I saw that everything was covered in red patterns. I felt like I was climbing the walls, wandering the ceilings. I felt like I was floating in infinity with all the spaces" (Monro, 2012: 78). This personal experience is transformed into objects in the work: mirrors, water, and LED bulbs. The viewer, in the position of the receiver, is included in the experience of infinity through these objects.

Mirrors and water embody infinity with their reflective functions. The LED bulbs are a reinterpretation of Kusama's signature dots; each point of light represents a spirit. "The room is arranged in such a way that it seems to have an infinite space far beyond its own size. When the viewer enters, they find a whole new world in front of them and feel as if they are in a space void" (Uz, 2013: 475).

Subject-Object Axis

The viewer becomes part of the work as a subject and seeks to attain the experience of infinity. However, this experience is only possible through the presence of the mirror-water-bulb triad. "The Infinite Points Mirrored Rooms were deliberately constructed with numerous mirrors and colored bulbs hanging from the ceiling to record the illusion of an infinite space. The mirrors create an inexhaustible space for the viewer, whose image is reflected back and forth endlessly" (Çelik, 2016: 171).

The paradox of the work emerges here: a small room contains infinity within it. The viewer enters this limited space but finds themselves in a perceptually boundless universe. The mirrors reflect the viewer from different angles, confronting them with their past and future selves.

Greimas's Actantial Model

Sender	**Object**	**Receiver**
The concept of infinity	Mirror, water, light bulb	Viewer
Assistant	**Subject**	**Inhibitor**
Kusama's hallucinations	Viewer	Physical limitations

The facilitator in the work is Kusama's obsessive hallucinations and her desire to translate these hallucinations into artistic language (Kıran, 2013: 119). The inhibitor is the physical limitations of the space; however, the artist overcomes this obstacle by using mirrors and water. Without an audience, the work cannot complete its meaning; when the room is empty, it remains merely a white box.

Trace Level

At the heart of the work lie existential questions. Kusama expresses infinity as follows: "I wanted to guess and measure infinity in a world without boundaries. How deep was the mystery? How far beyond the universe could infinite infinities go? While asking these questions, I was also looking at a single point: my own life. A single polka dot, a single dot among billions..." (tempomag.com.tr).

This questioning forms the central theme of the work: the individual is nothing in the face of the infinity of the universe; however, this nothingness also brings with it the experience of being part of infinity. Upon entering the room, the viewer becomes one of millions of points of light. This transformation is an experience of ego erasure and becoming part of a universal whole.

The mirror and water dichotomy takes on significance in this context. Both reflect, but water is associated with purity and cleanliness, while the mirror is associated with multiplicity and uncertainty. Kusama's use of water on the floor and mirrors on the walls holds together and neutralizes opposites such as good-evil and purity-chaos. The world that emerges in the work is constructed as a space beyond these opposites.

Fundamental Contradictions

Light ↔ Darkness: LED bulbs illuminate a dark room. Each bulb symbolizes a living being, a spirit. Humans are beings who illuminate the world; however, light cannot be perceived without darkness. This contrast reveals the fundamental paradox of existence.

Infinity ↔ Finitude: A small room contains infinity within it. This contrast shows that perception can transcend physical reality. Kusama suggests that the universe may be a finite structure perceived as infinite by creating infinite experiences within a limited space.

Chaos ↔ Order: The light bulbs appear to be hung randomly, but they are arranged in a specific order. Similarly, the billions of entities in the universe appear complex, but they possess their own internal order. Family, society, community... Every individual is part of an order.

Singularity ↔ Multiplicity: The viewer enters the room alone; however, the mirrors multiply them. This multiplicity is not a fragmentation of the self, but its multi-layered nature. Kusama allows the individual to experience their past, present, and future states simultaneously.

Good ↔ Evil: The dichotomy of water (purity, cleanliness) and mirror (uncertainty, multiplicity) symbolizes the good-evil duality within humans. Kusama brings these dualities together, eliminating opposites and creating a holistic space.

The phrase "millions of light years" in the title of the work signifies a temporal and existential distance beyond physical distance. The spirits here encompass all beings, both past and future. The viewer, as one of these spirits, confronts their own finitude and infinity.

Results

Yayoi Kusama's installation "Spirits a Million Light Years Away" reveals a multi-layered structure of meaning through semiotic analysis. The three-level analysis of the work shows how the artist transforms her personal traumas into a universal language.

At the descriptive level, the use of LED bulbs, mirrors, water, and space produces connotations beyond their literal meanings. Each sign concretizes the concept of infinity in different ways. At the narrative level, the work transforms the viewer from a passive observer into a subject. Analysis based on Greimas's actantial model reveals that the meaning of the work is only completed with the viewer's participation.

The fundamental oppositions at the thematic level (light-darkness, infinity-finiteness, singularity-multiplicity) reveal the philosophical depth of the work. Kusama creates a sense of infinity in a limited physical space, reducing the individual to a "single point"; however, this reduction also reminds us that the individual is part of the universal whole. The dichotomy in the artist's use of mirrors and water creates a unifying space that neutralizes opposites.

This study demonstrates that Kusama's art is not merely an autobiographical expression, but rather a complex system of meaning production within the context of contemporary art. The work is a powerful example of how

installation art can gain conceptual depth through the interaction between space, object, and viewer. Kusama's obsession with "dots" transforms into an existential inquiry in this work, offering the viewer the opportunity to experience the fine line between their own non-existence and existence.

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Görse 6: https://www.google.com/imgres?imgurl=https%3A%2F%2Fwww.biennial.com%2Fimg%2F5f08906f207e4d69%2Fyayoi-kusama-n0016.jpg&imgrefurl=https%3A%2F%2Fwww.biennial.com%2F2008%2Fexhibition%2Fartists%2Fyayoi-kusama&docid=KelDrvHCne0HaM&tbnid=Jlm7HG75YA-SsM%3A&vet=10ahUKEwjPy4XIhLriAhWI2KQKHfRpAjIQMwhAKAEwAQ..i&w=588&h=362&client=firefox-b-d&bih=744&biw=890&q=yayoi%20kusama%20infinity%20mirror%20room&ved=0ahUKEwjPy4XIhLriAhWI2KQKHfRpAjIQMwhAKAEwAQ&iact=mrc&uact=8

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Figure 8. https://tr.pinterest.com/pin/540783867727112971/

Policy Credibility and Working-Class Support: Why the Labour Party Lost the 2019 Election

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Abstract: This study examined the influence of political credibility and social class on voter trust in the Labour Party during the 2019 UK general election. Using quantitative data from the British Election Study, correlation, chi-square, and multinomial logistic regression analyses were applied to examine the influence of perceived party credibility on voter trust. The results indicate that electors who attribute credibility to Labour's policies are more inclined to have faith in the party's capacity to govern. Despite the fact that social class continues to be a factor, its impact is less significant as determined by credibility assessments. These findings underscore a transition from class allegiances to issue-oriented assessments and provide insights into the post-Brexit restructuring of British politics.

Keywords: Political Trust; Electoral Behaviour; Policy Credibility; Labour Party; Social Class

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Introduction

The 2019 general elections remain a remarkable memory for the Labour party, which lost the elections to the conservatives. According to Proctor (2019), the main reasons why the party lost in the elections included the selection of Jeremy Corbyn as the flag bearer, who, despite being decent and integral, lacked popularity. At the same time, the party had a detailed and long manifesto, which would take the government several years to implement. In the regime, Labour had been promising to elevate the traditional working class by helping those with low incomes but failed to support the old coal, steel, and manufacturing towns' voters, which broke the allegiance associated with various political seats (Walker, 2020). Furthermore, despite being a middle-class north Londoner, Corbyn lost support from the working-class community due to the use of unappealing policies. This contributed to reduced trust from voters who had been experiencing the economic implications and policy bouncing associated with Brexit.

This report investigates why Labour lost the elections using a quantitative approach. The response variable was the party's capability to form a solid government. In contrast, the explanatory variables were the party's ability to explain their policies and support from the working class. Correlation analysis, cross-tabulation, and multinomial logistic regression implied an increased belief in the party's capability to run a government

associated with belief in the party's ability to keep its promises and cater to the well-being of the working class. Age, an extraneous variable, had a positive but insignificant effect on the belief in the capability of Labour to run a government. This study contributes to understanding how issue-based credibility and class representation shape electoral behaviour in modern Britain.

Literature Review

The Effects of Policies/Promises on a Political Party's Victory in Elections

Gough (2020b) explored the reasons Labour Party lost the elections from a social perspective. According to this study, Jeremy Corbyn was elected as the British Labour Party's leader in 2015. His leadership promised to improve trade union rights, wages, and conditions, increase the taxation of the rich, nationalise some utilities, raise investment and productivity, improve wages, and expand and improve government services (p.1). The Conservatives promised to continue an austerity experienced for decades alongside some flimsy improvements. Despite experiencing them for decades, they voted for a party led by an incompetent liar: a party famous for a five-year internal split, the rule of law, attacks on human rights, and an egregious record of economic and social failure (p.3). The enlightenment assumption indicated that the voters were conscious of their political choices, which made them judge the presidential candidates objectively.

Hampshire (2015) argues that an incumbent's failure to achieve could result in a political party's success by receiving a positive political externality. However, the success of this strategy depends on conditions such as increased campaign from the insurgent party on the failure of the incumbent party, alongside concentrated support from the opposition party's supporters (p.1). Hampshire (2015) states that a government's policy record determines voters' collective judgment. The decision to reward or penalise a political party for lies about their policies depends on setting a questionable policy and how it would impact the voters differently (p.2). The 2010 UK general election saw the conservatives commit to reducing net immigration. The party failed to fulfil this promise and recommitted to reducing migration in 2015. The voters were considering two main issues affecting the UK, the economy and immigration.

Labour's programs would be substantial to Britain-based firms, increased building work, and improved worker training, but were disadvantageous to business due to state ownership of utilities, the democratisation of corporate governance, and corporate taxation. Despite having promising manifestos, the voters lacked a comprehension of the liberal ideas, which required a systematic campaign approach to address these policies or manifestos. However, the party had been dormant in explaining the manifestos except during the 2015 and 2019 elections. According to Gough (2020a), Brexit pushed the England nationals to realise the meaning of life, immigration, and economic positions under neoliberals (p.7). The Labour party failed to meet the economic policies associated with Brexit. At the same time, it failed to educate the public on the real economic implications of Brexit while failing to account for the funds used in implementing some of these policies (p. 9). Poor control of the manifestos resulted in a declined chance of winning the elections and reduced support from the supporters who trusted in the party’s ability to ensure their wellbeing.

H1: It was hypothesised that keeping promises or fulfilling the policies set in the party's manifesto would positively impact the beliefs on the political party's capability to run the government.

The Effects of Support from the Working Class on a Political Party's Victory

The working-class voters have been the heart of the UK elections, with the political parties able to woo them standing a better advantage to win the elections (Ford and Goodwin, 2014, p.25). According to Health (2015), working-class voters prefer redistributive policies, while middle-class voters resist the policies making them vote for the right-hand parties (p. 186). Britain's political representation is characterised by an increased representation of ethnic minorities and women but a declining representation of working classes and other social groups. For instance, the 2010 British General Election had 23 out of 29 posts composed of millionaires.

The immediate consequence of an underrepresentation of some social groups results in a reduced electorate touch with the people from such social groups of interest, support of left-wing policies, and challenges in changing the political party in authority. An increasing voter's expected utility is associated with sociodemographic dissimilarity between the voters and their preferred candidates. This leads voters from a working-class background to have confidence in being represented by a politician from a solid working-class background. Heather (2015) found that there has been a declining size of working-class voters, which has led to the shift of political parties toward left-hand policy positions (p. 175). At the same time, Robison et al. (2021, p. 727) found that working-class appeals were associated with increased support from working-class voters while polarising candidate support along class lines.

Brexit had paved the way for a weakened relationship between working-class Britain and Labour. Brexit reconfigured the main parties' geographical base of electoral support while paving the way for the conservatives to lure the working-class heartlands (Cutts et al., 2020, p. 12). Labour had been focusing on retaining support from the traditional, working-class heartlands and expanding that from the liberal, metropolitan middle class (Evans and Tilley, 2012, p. 142). The party declared an interest in these voters during the elections campaign but, evidentially, had neglected them through a diminished number of electoral members from the working class. The career politicians in the party were less likely to support the policies in favour of the working class, which left the party electorally vulnerable to counter-mobilisation (Prosser, 2021, p. 455). The intertwining between Brexit and economic management led to a central focus on the political leaders selected by given political parties (Evans and Tilley, 2017, p.18). Most of the working-class Conservative voters questioned the leadership of the Labour party, which accounted for the shift in the fault lines in British electoral politics.

According to Hart (2022), increased support of the Conservative party by the 'red wall' of Labour's former working-class strongholds in Northern England and the Midlands signified a loss for Labour (p. 301). Although Blair (a leader of New Labour) had attempted to build a coalition between the working and middle classes, this category of voters from the red wall increasingly avoided voting or supported nativist parties.

H2: It was expected that reduced support from the working class (associated with reduced concern of Labour for

the working class's well-being) would result in the belief in the reduced capability of Labour to run the government.

Methodology

This study used a quantitative approach to test the two hypotheses that explore the association between voters' support, a political party's ability to keep promises, and working-class voters' support. The study uses data collected by the British Election Study (2021). The main limitation of the data used in the analysis is that most variables were collected on Likert scales and linear numeric scales, which led to several assumptions in the analysis. This exposed the analysis to acquiescence bias, a response associated with selecting positive response options from a scale. Possible outcomes of the bias include misguided inference and systematic errors.

The analysis used a correlation analysis, chi-square tests of independence, and multinomial logistic regression to test the hypothesis. Correlation analysis will use Spearman's correlation to test the association between the variables (Prematunga et al., 2012, p. 197). The chi-square test of independence will efficiently investigate whether there was an association between the capability to run a government and (1) the ability to keep promises and (2) Ensuring the welfare of the working class. A multinomial logistic regression model describes the association between selected explanatory variables and a response variable with an ordinal variable having at least three groups without any natural order (Frost, 2022). The Statistical Package for the Social Sciences (SPSS) was used to analyse the association between the variables and test the hypothesis.

The response variable used in the study was the ability of Labour to handle a government (Variable Q02_2). The variable was categorical and measured on a nominal scale without a natural order. Four categories were used to answer the party's ability to handle a government (-1=Don't know, 1= Capable, 2= Not capable, 3=Neither or both). These methods were selected due to their suitability for categorical data and ordinal responses.

1. The first explanatory variable was the ability of the party to keep promises (variable Q01_1). Again, the variable was measured using four categories (-1=Don't know, 1= Keeps Promises, 2= Breaks Promises, 3=Neither or both).
2. The second explanatory variable was the role of Labour in ensuring the welfare of the working class. (Variable B13_5). The variable was measured under five categories ((-1=Don't know, 1= Very Closely, 2= Fairly closely, 3=Not very closely, 4).
3. A third explanatory variable (Age of the respondents or variable Age) was used as an extraneous variable that could affect the belief in Labour Party's capability to run a government. According to Eads (2022), extraneous variables influence experimental results since they are uncontrolled factors. This variable was measured on a continuous scale.

Two multinomial logistic regression models were conducted to investigate the relationship between the response variable and the respondents' age being included in the first model and excluded in the second model.

Data Analysis Procedures

Descriptive Statistics of the Continuous Variable (Age)

Three thousand nine hundred and forty-six respondents participated in the survey. Of these, 3766 filled in their age details ranging from 18 to 99 (M=52.4822, SD=17.998).

Frequency Analysis of the Categorical Variables (Feelings about the Party's Capability to run the Government, Keep Promises and Support the Working Class)

The first variable of interest was the capability of Labour to run a government. 10.5% of the respondents did not know whether the party was capable of running the government, 16.5% felt that the party was capable, and 46.2% felt that the party was incapable. In comparison, 14% were indifferent about their position. The next variable investigated respondents' position on how Labour catered to the UK working class. 8.5% of the respondents had no idea about this question. The percentage of respondents who felt that Labour looked after the interests of working-class members very closely and fairly closely were 30.2% and 41.6%.

In contrast, the percentage of respondents who felt that Labour looked after the interests of working-class members not very close and not at all closely were 14.6% and 4.5%. Finally, the respondents answered about their position concerning Labour's ability to keep promises. 14.5% of the respondents did not know whether the party kept promises, while 33.7% were indifferent about this question. At the same time, 10.4% and 28.7% of the respondents felt that the party kept and broke its promises, respectively. Table 1 below summarises the frequencies for the selected variables.

Table 1. Frequency Distribution for the Variables Used in the Study

		Frequency	Per cent
Capable Strong Government	Don't know	416	10.5
	Capable of being a strong government	652	16.5
	Not capable of being a strong government	1825	46.2
	Neither or both	552	14.0
Labour Looks after the Working Class	Don't know	336	8.5
	Very closely	1193	30.2
	Fairly closely	1643	41.6
	Not very closely	575	14.6
	Not at all closely	178	4.5
Labour Keeps Promises	Don't know	573	14.5
	Keeps its promises	412	10.4
	Breaks its promises	1132	28.7
	Neither or both	1328	33.7

An Analysis of the Spearman's Correlation Coefficients between the Variables

There was a weakly strong positive but significant correlation between the respondents' ages and the belief in the ability of Labour to run a government, r (3290) =0.101, p=.00. There is also a moderately strong positive but significant association between the belief in the capability of Labour to run a government and the belief in its ability to keep promises, r (3445) =0.349, p=.00. At the same time, there was a weakly strong positive and significant correlation between the beliefs on how Labour looks after the interests of working class and the beliefs in its ability to run a government, r (3290) =0.163, p=.00. The table below summarises the correlations between the variables.

Table 2. Correlation Coefficients for Age, working-class interests, keeping promises, and capability to run a government

		1.	2.	3.	4.
1.	Age at last birthday	1			
2.	Labour looks after the interests of the working class	.086**	1		
3.	Labour Keeps promises	.075**	.191**	1	
4.	Labour is Capable of forming a strong government	.108**	.210**	.430**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Chi-Square Analysis of the Independence of the Categorical Variables in the Study

Chi-square tests of independence were conducted to investigate the association between the selected response and explanatory variables. The percentage of people who felt that Labour looked after the interests of the working class differed based on their feelings about the party's capability to run a government, X (12, N=3445) =610.39, p=.00. A partial eta squared of 0.0676 indicated that the feelings about Labour's capability to run a government had a medium effect on the opinion towards the party's ability to look after the interests of the working class.

At the same time, the percentage of respondents who had an opinion about how Labour kept its promises differed based on their feelings about the party's capability to run a government, X (9, N=3445) =1818.36, p=.00. A partial eta squared of 0.202 implied that the feelings about Labour's capability to run a government had a strong effect on the opinion towards the party's ability to keep promises. Figure 1 shows the distribution of feelings about Labour's ability to look after the interests of the working class based on the party's capability to run a government. In contrast, Figure 2 shows the distribution of feelings about Labour's ability to keep promises.

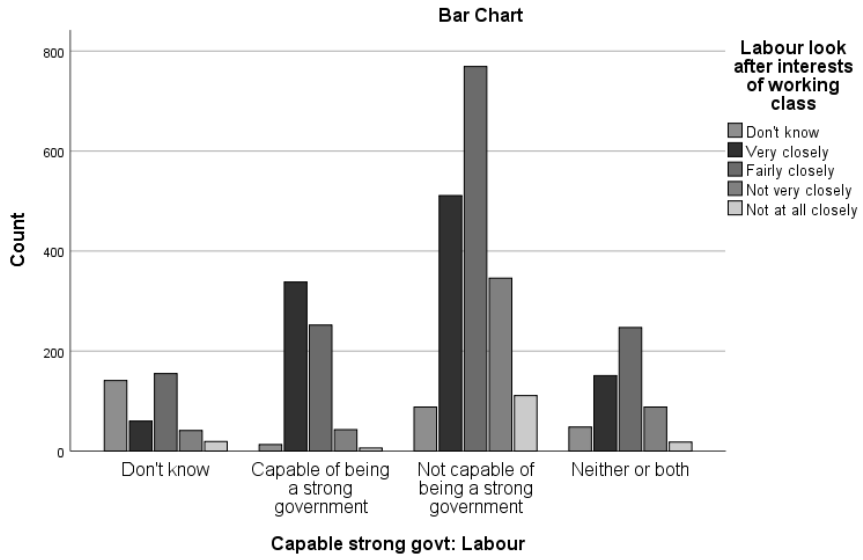

Figure 1. A Bar Chart of the Distribution of Feelings about how Labour Caters to the Interests of the Working Class

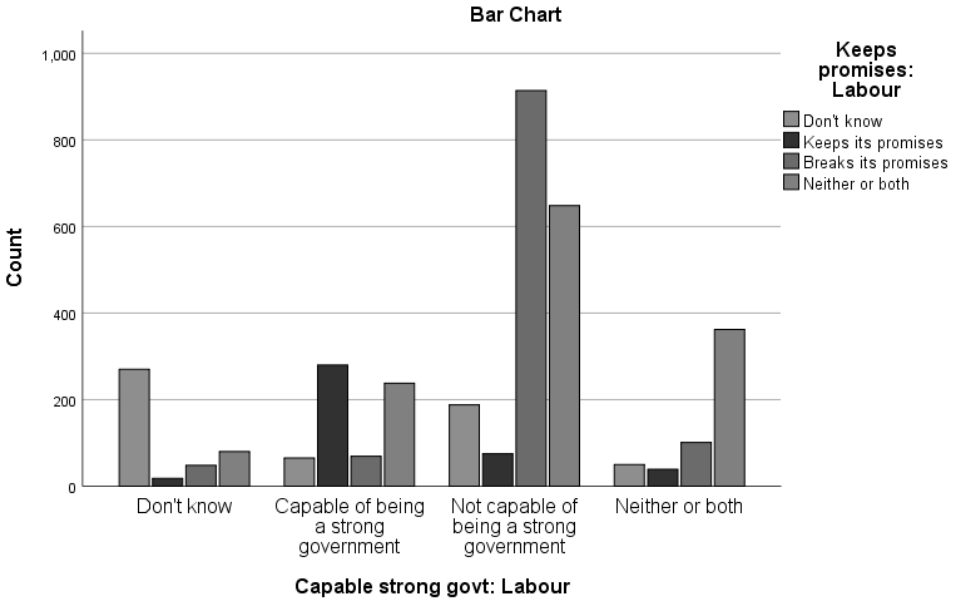

Figure 2. A Clustered Chart of the Feelings on How Labour Keeps Promises

Interpretation of the Multinomial Logistic Regression Results

Two multinomial logistic regression models were conducted to explore the association between the selected explanatory variables and the capability of Labour being a strong government. The first model regressed the capability of being a strong government to two response variables, keeping promises and looking after the interests of the working class.

Don't Know in Relation to Strong Governance

The logit probability of believing Labour could be a strong government was 0.278 (model 1) and 0.014 (model 2). A unit increase in the opinions about Labour looking out for the interests of the working class would result in a 0.154-unit decrease (model 1) and 0.172-unit decrease (unit 2) in the multinomial log odds of believing that Labour was capable of forming a strong government. At the same time, a unit increase in the opinions about Labour keeping its promises results in a 0.565-unit decrease (model 1) and 0.555-unit decrease (model 2) in the multinomial log odds of believing that Labour was capable of forming a strong government. A unit increase in age resulted in a 0.04-unit increase in the multinomial log odds of believing that Labour could form a strong government.

Not Capable of Forming a Strong Government in Relation to Forming a Strong Government

The logit probability of believing Labour could be a strong government was 0.172 (model 1) and -1.235 (model 2). A unit increase in the opinions about Labour looking out for the interests of the working class would result in a 0.301-unit increase (model 1) and a 0.288-unit increase (model 2) in the multinomial log odds of believing that Labour was capable of forming a strong government. At the same time, a unit increase in the opinions about Labour keeping its promises results in a 0.188-unit increase (model 1) and 0.175-unit increase (model 2) in the multinomial log odds of believing that Labour was capable of forming a strong government. A unit increase in age resulted in a 0.029-unit increase in the multinomial log odds of believing that Labour could form a strong government.

Both models described the association between the belief in Labour's capability to form a strong government and the identified explanatory variables. The explanatory variables in model 1 were significant in modelling the capability to form a strong government. For the working class's interests, G (3) =4197.24, P=0.00. At the same time, G (3) =4644.14, p=0.00 for keeping promises, and G (3) =4609.21, p=0.00 for age. Similarly, the explanatory variables in model 2 were significant in modelling the capability to form a strong government. For the working class's interests, G (3) =4542.21, P=0.00. At the same time, G (3) =4900.91, p=0.00 for keeping promises, and G (3) =4609.214, p=0.00 for age.

Neither or Both

The logit probability of believing Labour was capable of being a strong government was -1.267 (model 1) and -1.481 (model 2). A unit increase in the opinions about Labour looking out for the interests of the working class would result in a 0.102-unit increase (model 1) and 0.099-unit increase (model 2) in the multinomial log odds of believing that Labour was capable of forming a strong government. At the same time, a unit increase in the opinions about Labour keeping its promises results in a 0.463-unit increase (model 1) and 0.464-unit increase (model 2) in the multinomial log odds of believing that Labour was capable of forming a strong government. A unit increase in age resulted in a 0.04-unit increase in the multinomial log odds of believing that Labour could

form a strong government. Table 3 shows the results for Model 1, while Table 4 shows the results for model 2.

Table 3. Regression Model 1: Response Variable= Capability of forming a strong government, age is excluded.

Parameter Estimates							
Capable strong govt: Labour		B	Std. Error	Wald	df	Sig.	Exp(B)
Don't know	Intercept	0.278	0.100	7.774	1	0.005	
	Labour looks after the interests of the working class	-0.154	0.054	8.247	1	0.004	0.857
	Keeps promises: Labour	-0.565	0.044	165.398	1	0.000	0.568
Not capable of being a strong government	Intercept	0.172	0.099	2.984	1	0.084	
	Labour looks after the interests of the working class	0.301	0.043	49.832	1	0.000	1.351
	Keeps promises: Labour	0.188	0.035	29.630	1	0.000	1.207
Neither or both	Intercept	-1.267	0.151	70.495	1	0.000	
	Labour looks after the interests of the working class	0.102	0.054	3.524	1	0.060	1.108
	Keeps promises: Labour	0.463	0.053	75.842	1	0.000	1.589

a. The reference category is: Capable of being a strong government.

Table 4. Regression Model 2: Response Variable= Capability of forming a strong government, age is included.

Parameter Estimates						
Capable strong govt: Labour[a]	B	Std. Error	Wald	df	Sig.	Exp(B)

Don't know	Intercept	0.014	0.201	0.005	1	0.946	
	Labour looks after the interests of the working class	-0.172	0.056	9.500	1	0.002	0.842
	Keeps promises: Labour	-0.555	0.045	150.129	1	0.000	0.574
	Age at last birthday	0.006	0.004	2.024	1	0.155	1.006
Not capable of being a strong government	Intercept	-1.235	0.169	53.557	1	0.000	
	Labour looks after the interests of the working class	0.288	0.045	41.309	1	0.000	1.333
	Keeps promises: Labour	0.175	0.036	23.553	1	0.000	1.191
	Age at last birthday	0.029	0.003	107.250	1	0.000	1.029
Neither or both	Intercept	-1.481	0.221	45.082	1	0.000	
	Labour looks after the interests of the working class	0.099	0.056	3.144	1	0.076	1.104
	Keeps promises: Labour	0.464	0.055	72.059	1	0.000	1.590
	Age at last birthday	0.004	0.004	1.590	1	0.207	1.004

a. The reference category is: Capable of being a strong government.

Analysis of the Results

The findings showed a negative association between the belief in Labour's ability to look after the interests of the working class and the capability of the party to raise a strong government for the people without an idea of the political occurrences, but a positive effect for the respondents who felt that the party was not capable of handling a government and for those who were indifferent. At the same time, the findings indicate a positive effect of beliefs that the party keeps promises and the belief that Labour is capable of being a strong government. Age had an insignificant but positive effect on the belief that Labour could be a strong government. According to the British Election Study (2021), there were visible voting behaviour patterns associated with age. Older voters supported the conservatives, while younger voters supported the Labour party.

The Likert scale's values describing Labour's ability to keep its promise indicate an increasing optimism about the party. This implies that an increasing belief that the party would deliver its promises was associated with an increasing belief that the party could run a government. At the same time, an increasing belief that the party was mindful of the well-being of the working class corresponded with an increasing belief in its abilities to run a government. Regression analysis indicated a positive correspondence of the belief that Labour was capable of running a government and its ability to look after the interests of the working class and keep promises.

Similarly, the chi-square tests imply a relationship between the variables used in the analysis. The test shows a strong effect of the ability to fulfil the set policies on the belief that the party can run a government. These findings correspond to the first hypothesis that keeping promises increased belief in the party's ability to run a government. The opinions about how Labour looked after the well-being of the working class greatly impacted the belief in the party's ability to run a government. The findings also support the second hypothesis, which implied that increasing the support given to the working class increased the belief in the party's ability to run a government.

Results and Discussion

Statistical analysis provides clear empirical evidence supporting the hypotheses proposed in this study.

Spearman correlation analysis indicates a significant positive correlation between perceptions of political credibility and voter trust ($\rho = 0.42$, $p < 0.001$), supporting Hypothesis 1. In other words, respondents who perceive the Labour Party's policies as trustworthy are more likely to believe in the party's ability to govern. This finding supports Dalton's (2018) assertion that modern voters increasingly place importance on specific issues in political decisions. This result suggests that voters' perceptions of the realism and consistency of party promises are positively correlated with increased political trust.

The Chi-Square test of independence indicates a significant positive correlation between social class affiliation and perceptions of party competence ($\chi^2(4, N = 600) = 25.37$, $p < 0.001$), partially supporting Hypothesis 2.

Working-class respondents had less confidence in the Labour Party's ability to govern than middle-class respondents. This trend is consistent with Evans and Tilly's (2017) findings that class loyalty to the Labour Party has been gradually declining. The 2019 election results indicate a significant shift in voting behavior toward trust-based voting rather than traditional class affiliation.

Multinomial logistic regression analysis showed that political trust was the most important predictor of voter trust ($\beta = 1.34$, $p < 0.01$). The effect of class was small but still statistically significant ($\beta = 0.52$, $p < 0.05$). The pseudo-R^2 value for this model was 0.41, indicating moderate explanatory power.The data indicate that voter confidence in political parties is more significantly affected by perceived trustworthiness and performance than by traditional class affinity.

In general, these findings suggest that electors are increasingly assessing parties based on the credibility of their promises and the performance of issues, rather than traditional social class affiliation.

Discussion and Conclusion

These findings suggest that issue-related evaluations play a central role in British voters' decision-making and contribute to current research on voting behavior and political trust. Fieldhouse et al. (2021) argue that voters' evaluations of integrity and competence are key determinants of postwar elections. The implied decline in support among working-class voters suggests a novel relationship between political decision-making and socioeconomic identity, consistent with the more general thesis of Green and Jennings (2019).To regain voter trust, these findings suggest that political parties should prioritize political reassurance and transparent communication. To regain the support of working-class voters, the Labour Party should prioritize implementing a credible economic strategy over seeking symbolic class power.

However, this survey still has several limitations. Though it relies on self-reported data, results may fluctuate due to social biases. Furthermore, the cross-sectional design limits the ability to infer causal relationships. Future research may employ cross-sectional data and experimental methodologies to investigate the dynamics of voter trust during election cycles.

This study aimed to explore why Labour lost the 2019 general elections using a quantitative approach. The study used survey results from the British election study for the analysis. The available dataset allowed proxies to represent various measures identified from the study. As such, the response variable was the belief in the capability of Labour to run a government. In contrast, the explanatory variables used were age, the belief in the party's ability to keep promises, and the belief in the party's ability to tend to the welfare of the working class. Analysis was conducted using correlation analysis, cross-tabulation, and multinomial logistic regression. It affirmed that keeping promises and supporting the working class in Britain are significant indicators of a party's capability to run a government.

The study limitations observed in the study include the use of a multinomial logistic regression as an outcome prediction model. According to Thanda (2022), this model cannot predict outcomes on a continuous scale and assumes a linear association between the predictor and response variables. The study findings imply that Labour has to re-evaluate its manifestos, policies, and approaches to attaining the policies to regain voters' trust. Previous readings exploring the topic indicate a significant role of Middle-Class British voters in general elections. Further analysis can be conducted on the study to investigate the association between middle-class voters and general election outcomes. At the same time, the study can be replicated using multiple linear regression and proxies for the response and explanatory variables measured on continuous scales.

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An Investigation of Pre-service Teachers' Curriculum Theory Orientations: A Case Study at Eskişehir Osmangazi University

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Abstract: Pre-service teachers' curriculum theory orientations represent fundamental variables that shape their future instructional decisions and classroom practices. This study investigated the curriculum theory orientations of 116 pre-service teachers at Eskişehir Osmangazi University Faculty of Education using the Inventory of Orientations in Curriculum Theories (IOCT), developed by Türe (2017) and adapted for pre-service teachers by Türe and Bıkmaz (2023). The IOCT measures three orientations based on Marsh and Willis's (2003) classification: Prescriptive, Descriptive, and Critical-Exploratory. Using descriptive survey methodology and Pearson correlation analysis, results indicated that pre-service teachers demonstrated high levels of Critical-Exploratory (M=4.20) and Descriptive (M=4.12) curriculum theory orientations, while showing moderate levels of Prescriptive orientation (M=3.13). Correlation analysis revealed no significant relationships among the subscales ($p>0.05$), suggesting these orientations emerge as independent constructs. These findings indicate that pre-service teachers tend toward interpreting curriculum critically, considering individual differences, and evaluating with a critical perspective rather than accepting curriculum as given. Results have important implications for teacher education programs aiming to develop flexible, critically-informed practitioners.

Keywords: Curriculum theory orientations, Pre-service teachers, IOCT, Faculty of education, Teacher education

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Introduction

Curriculum orientation determines how teachers view curricula, their dimensions, and how they utilize them in practice (Ornstein & Hunkins, 1998). The orientation toward curriculum theories specifically addresses how teachers explain and apply curricula and their dimensions based upon theories developed by curriculum specialists. Understanding these orientations is particularly critical during teacher education, as they significantly influence pre-service teachers' developing professional identities and future classroom practices. Research consistently demonstrates that teachers' theories and beliefs about curriculum profoundly affect classroom decisions and teaching practices (Chant, 2002; Cornett, 1990; Stipek et al., 2001). Teacher beliefs represent one of the most important factors determining which aspects of curriculum teachers emphasize and with what intensity (Pajares, 1992).

Various researchers have proposed different classification systems for curriculum orientations. McNeil (1977) identified four curriculum orientations: humanistic, social reconstructionist, technological, and academic. Eisner and Vallance (1974) proposed five basic orientations: academic, social restructuring, cognitive, humanitarian, and technological. To measure these orientations empirically, Cheung (2000) developed the Curriculum Orientation Inventory (COI), later modified by Cheung and Wong (2002). However, researchers noted psychometric challenges when applying these instruments across different cultural contexts (Jenkins, 2009).

This study employs Marsh and Willis's (2003) classification system, which categorizes curriculum theorists into three orientations: Prescriptive (society-centered approaches emphasizing transmission of established knowledge and social norms), Descriptive (understanding educational processes through observation and contextual interpretation), and Critical-Exploratory (critical stance toward power structures and inequalities, emphasizing emancipation and social justice). This framework builds upon earlier classifications by Macdonald (1971) and Jackson (1992) and offers a comprehensive lens for understanding different philosophical and practical approaches to curriculum.

Previous research in the Turkish context has shown that pre-service teachers hold multiple orientations simultaneously rather than exclusive adherence to one perspective (Bay et al., 2012). Bay et al. (2012) examined elementary pre-service teachers' curriculum approaches and found that cognitive process and humanistic orientations were prevalent, emphasizing a "both/and" rather than "either/or" framework for understanding curriculum beliefs. Similarly, Tanrıverdi and Apak (2014) explored relationships between pre-service teachers' curriculum orientations and critical thinking dispositions, revealing positive correlations between certain curriculum approaches and critical thinking tendencies. Gürpınar et al. (2020) investigated science pre-service teachers' educational philosophies and curriculum orientations across four years of teacher preparation, finding that orientations fluctuate throughout the program, with students generally showing decreased prescriptive orientations and increased emphasis on student-centered approaches as they progressed.

The development of the IOCT by Türe (2017) and Türe and Bıkmaz (2023) represents an important contribution to this research tradition, providing a culturally-grounded instrument specifically designed for the Turkish educational context and aligned with the Marsh and Willis (2003) classification system. The primary purpose of this study was to determine the levels of pre-service teachers' curriculum theory orientations and examine relationships among these orientations at Eskişehir Osmangazi University Faculty of Education.

Method

Research Design

This study employed a descriptive survey research design appropriate for investigating current status of phenomena without experimental manipulation (Fraenkel et al., 2012). The descriptive approach allowed for systematic examination of pre-service teachers' curriculum theory orientations.

Participants

The sample consisted of 116 pre-service teachers enrolled at Eskişehir Osmangazi University Faculty of Education during 2023-2024 academic year. Participants were selected from various departments within the faculty and had completed curriculum-related courses such as "Principles and Methods of Instruction" or "Special Teaching Methods." This criterion ensured that participants possessed sufficient knowledge about curriculum concepts to meaningfully respond to the inventory items. The purposive sampling approach was justified because participants needed specific curriculum-related coursework to understand the theoretical concepts addressed in the IOCT.

Data Collection Instrument

Data were collected using the Inventory of Orientations in Curriculum Theories (IOCT), developed by Türe (2017) for in-service teachers and adapted for pre-service teachers by Türe and Bıkmaz (2023). The inventory consists of three subscales measured on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree):

Orientation Scale for Prescriptive Curriculum Theories (OSPCT): Contains 27 items measuring agreement with prescriptive curriculum theory principles. Sample items address beliefs about curriculum's role in transmitting societal values, developing student conformity to social norms, and preparing good citizens.

Orientation Scale for Descriptive Curriculum Theories (OSDCT): Contains 18 items measuring agreement with descriptive curriculum theory principles. Sample items focus on understanding educational processes through observation, learning from well-described teaching practices, and viewing curriculum as a flexible roadmap.

Orientation Scale for Critical-Exploratory Curriculum Theories (OSCECT): Contains 19 items measuring agreement with critical-exploratory curriculum theory principles. This subscale includes three dimensions: (a) making sense of education's socio-political content in individuals, (b) developing resistance to deterministic curricula and practices, and (c) awareness about society's producing/reproducing functions.

Psychometric properties of the IOCT have been established through extensive validity and reliability analyses reported in Türe and Bıkmaz (2023), demonstrating acceptable internal consistency coefficients (Cronbach's alpha values ranging from .907 to .954 for original scales) and construct validity through both exploratory and confirmatory factor analyses.

Data Collection Procedure

Data collection occurred during the 2023-2024 academic year. Pre-service teachers were informed about the

study's purpose, voluntary nature of participation, and confidentiality procedures. The inventory was administered during class time, with participants completing the questionnaire in approximately 20-25 minutes.

Data Analysis

Data were analyzed using PSPP statistical software. The analytical approach included descriptive statistics (arithmetic means and standard deviations) for each subscale and Pearson product-moment correlation coefficients to examine relationships among the three curriculum theory orientations. Prior to conducting analyses, data were screened for missing values, outliers, and assumptions of normality. All statistical tests were conducted at the .05 significance level.

Results

Descriptive Statistics

Table 1 presents descriptive statistics for pre-service teachers' curriculum theory orientations across the three subscales.

Table 1 Descriptive Statistics for Curriculum Theory Orientations

Scale	N	Mean	Standard Deviation
OSPCT (Prescriptive)	116	3.13	0.73
OSDCT (Descriptive)	116	4.12	0.49
OSCECT (Critical-Exploratory)	116	4.20	0.47

Results indicate that pre-service teachers demonstrated high levels of agreement with both Critical-Exploratory (M=4.20, SD=0.47) and Descriptive (M=4.12, SD=0.49) orientations, while showing moderate agreement with Prescriptive orientation (M=3.13, SD=0.73). The relatively high means for Critical-Exploratory and Descriptive orientations suggest that pre-service teachers in this sample favor approaches emphasizing critical thinking, contextual interpretation of curriculum, and consideration of individual differences. The larger standard deviation for Prescriptive orientation (SD=0.73) compared to Descriptive (SD=0.49) and Critical-Exploratory (SD=0.47) orientations suggests greater heterogeneity in pre-service teachers' views about prescriptive approaches.

Correlation Analysis

Table 2 presents Pearson correlation coefficients examining relationships among the three curriculum theory orientations. Correlation analysis revealed no statistically significant relationships among the three subscales ($p>0.05$). The correlation between Prescriptive and Descriptive orientations ($r=0.07$), Prescriptive and Critical-Exploratory orientations ($r=-0.10$), and Descriptive and Critical-Exploratory orientations ($r=-0.01$) were all

negligible in magnitude and statistically non-significant. These findings suggest that Prescriptive, Descriptive, and Critical-Exploratory curriculum theory orientations function as independent belief systems among pre-service teachers in this sample.

Table 2 Correlations Among Curriculum Theory Orientations

Scale	OSPCT	OSDCT	OSCECT
OSPCT (Prescriptive)	1.00	0.07	-0.10
OSDCT (Descriptive)	0.07	1.00	-0.01
OSCECT (Critical-Exploratory)	-0.10	-0.01	1.00

Discussion

The findings provide important insights into how pre-service teachers at Eskişehir Osmangazi University conceptualize curriculum and their future implementation roles. The pattern of high Critical-Exploratory and Descriptive orientations combined with moderate Prescriptive orientation suggests that teacher education programs are successfully fostering critical thinking and contextually-responsive approaches.

High Critical-Exploratory and Descriptive Orientations

The strong Critical-Exploratory orientation (M=4.20) indicates that pre-service teachers recognize education's socio-political dimensions and value critical examination of curriculum. This finding aligns with contemporary educational reform movements emphasizing critical pedagogy and social justice in teacher education (Freire, 1970; Giroux, 2011). Pre-service teachers' high scores on this dimension suggest they appreciate education's potential for social transformation and understand the importance of helping students develop critical consciousness.

The high Critical-Exploratory orientation found in this study is particularly noteworthy when compared with previous Turkish research. While Bay et al. (2012) found that cognitive process and humanistic orientations were prevalent among elementary pre-service teachers, the present study's finding that pre-service teachers strongly endorse Critical-Exploratory orientations suggests that Turkish teacher education may be increasingly emphasizing critical thinking and transformative approaches to curriculum. This interpretation is supported by Tanrıverdi and Apak (2014), who found positive correlations between certain curriculum approaches and critical thinking tendencies among Turkish pre-service teachers. Similarly, research examining pre-service teachers' critical thinking dispositions generally shows that Turkish teacher candidates value critical examination of ideas and practices (Şahin & Göğebakan-Yıldız, 2021).

The high Descriptive orientation (M=4.12) demonstrates pre-service teachers' understanding that curriculum implementation requires attention to contextual factors, student needs, and classroom dynamics. This reflects

practical wisdom about teaching, acknowledging that effective curriculum use involves more than following prescribed plans (Ornstein & Hunkins, 1998). As Ornstein and Hunkins argued, teachers who understand curriculum descriptively recognize the importance of observing and learning from actual teaching practices rather than relying solely on theoretical prescriptions.

The prominence of Descriptive orientation in this study resonates with findings from research examining how curriculum-related coursework shapes pre-service teachers' perspectives. Gürpınar et al. (2020) investigated science pre-service teachers' educational philosophies and curriculum orientations across four years of teacher preparation and found that orientations fluctuate throughout the program, with students generally showing decreased prescriptive orientations and increased emphasis on student-centered, context-responsive approaches as they progressed through their studies. The high Descriptive orientation observed in the present sample may reflect the influence of courses emphasizing "Principles and Methods of Instruction" and "Special Teaching Methods," which typically stress contextual adaptation and responsive teaching.

Moderate Prescriptive Orientation

The moderate Prescriptive orientation (M=3.13) indicates that pre-service teachers are less enthusiastic about viewing curriculum as a fixed blueprint for transmitting predetermined knowledge and values. This pattern may reflect contemporary teacher education emphasis on active learning, differentiated instruction, and constructivist approaches, which align better with Descriptive and Critical-Exploratory rather than Prescriptive orientations. Exposure to curriculum theory courses may have encouraged critical examination of traditional, teacher-centered approaches.

The moderate Prescriptive scores in this study align with findings from Bay et al. (2012), who emphasized that pre-service teachers hold multiple orientations simultaneously rather than adhering exclusively to one approach, describing this pattern as "both/and" rather than "either/or." The present study's finding that pre-service teachers show moderate rather than low Prescriptive orientations while simultaneously endorsing Descriptive and Critical-Exploratory perspectives empirically supports this conceptualization.

Research examining educational philosophies provides additional context for understanding moderate Prescriptive orientations. Çelik and Orçan (2016) found that Turkish pre-service teachers most strongly endorsed Existentialism (a philosophy aligned with Critical-Exploratory orientations) while showing least agreement with Essentialism (aligned with Prescriptive orientations). Similarly, Gürpınar et al. (2020) showed that as pre-service teachers progress through teacher education programs and complete curriculum-related courses, their prescriptive orientations tend to decrease while student-centered approaches increase.

However, the moderate rather than low scores suggest pre-service teachers do not entirely dismiss structured curriculum frameworks. This balanced perspective may be pedagogically appropriate, as effective teaching requires integrating elements from different theoretical orientations depending on educational goals, content,

and student characteristics. As Ornstein and Hunkins (1988) noted, an individual's curriculum approach reflects their worldview, values, and knowledge, and effective educators must be capable of flexibly deploying different approaches as situations demand.

Independence of Curriculum Theory Orientations

The lack of significant correlations among orientations represents an important finding suggesting these orientations function as distinct belief systems that teachers may draw upon in different contexts. This finding aligns with research on teacher beliefs showing that beliefs exist in complex, sometimes contradictory clusters rather than unified, coherent systems (Pajares, 1992). Teachers may hold seemingly contradictory beliefs simultaneously, activating particular beliefs in response to specific situations or demands. For curriculum orientations, this means pre-service teachers might emphasize structured, prescriptive approaches when teaching foundational skills while adopting critical-exploratory perspectives when addressing social issues.

The independence finding is particularly significant when compared with previous Turkish research. Bay et al. (2012) explicitly argued that pre-service teachers' curriculum beliefs should be understood through a "both/and" rather than "either/or" framework, suggesting that multiple orientations coexist rather than compete. The present study's correlation analysis provides empirical support for this conceptualization, demonstrating statistically that endorsement of one orientation does not predict endorsement or rejection of others.

Research examining relationships between curriculum orientations and other constructs provides additional insight into the independence finding. Tanrıverdi and Apak (2014) found that different curriculum orientations showed varying relationships with critical thinking dispositions, with some orientations positively predicting critical thinking while others showed no relationship. This pattern of differential relationships supports the interpretation that curriculum orientations function as independent constructs that may be activated in different contexts or for different educational purposes.

The independence of orientations suggests that teacher education programs need not view these perspectives as competing philosophies requiring students to choose one orientation over others. Instead, effective teacher preparation might help pre-service teachers understand when and how to appropriately employ different orientations, developing flexibility in their theoretical thinking. This interpretation aligns with research on teacher decision-making showing that effective teachers draw upon multiple theoretical frameworks depending on instructional contexts, student needs, and content demands (Shavelson & Stern, 1981).

Implications for Teacher Education

These findings have several implications for teacher education programs:

Balanced Curriculum Theory Instruction. Programs should expose pre-service teachers to multiple curriculum theory perspectives while helping them understand appropriate contexts and limitations of

each orientation. Rather than advocating for a single "correct" approach, teacher educators might emphasize situational appropriateness and theoretical flexibility.

Development of Critical Thinking. The strong Critical-Exploratory orientation suggests teacher education programs are successfully fostering critical thinking about curriculum. Programs should continue emphasizing critical examination of educational assumptions, power dynamics, and social justice issues while ensuring pre-service teachers develop practical curriculum implementation skills.

Integration of Theory and Practice. High Descriptive orientation indicates pre-service teachers value understanding curriculum through observation of actual practice. Teacher education programs should provide extensive field experiences and case studies illustrating how theoretical perspectives play out in real classrooms, helping pre-service teachers develop practical wisdom alongside theoretical knowledge.

Recognition of Orientation Independence. Understanding that curriculum orientations function independently suggests teacher educators should help pre-service teachers develop metacognitive awareness about their own theoretical perspectives and how these might appropriately shift across different teaching situations.

Limitations

Several limitations should be considered when interpreting these findings. First, the study included only pre-service teachers from one university, limiting generalizability to other institutions or educational contexts. Second, the IOCT relies on self-reported beliefs, which may not perfectly align with actual teaching practices. Future research might combine survey data with classroom observations to examine consistency between espoused orientations and enacted practices. Third, findings reflect the specific cultural and educational context of Turkish teacher education. Fourth, the cross-sectional design captured orientations at a single time point. Longitudinal research tracking changes in curriculum orientations throughout teacher preparation and into early career teaching would provide valuable insights into how these beliefs develop and stabilize.

Conclusion

This study demonstrated that pre-service teachers at Eskişehir Osmangazi University strongly endorsed Critical-Exploratory and Descriptive orientations while showing moderate agreement with Prescriptive orientation. The independence of these orientations suggests they represent distinct belief systems that teachers may employ flexibly depending on context. These findings indicate that Turkish teacher education programs are successfully developing pre-service teachers who value critical thinking, contextual responsiveness, and flexible approaches to curriculum implementation rather than rigid adherence to prescribed curriculum plans.

The pattern of results observed in this study aligns with previous Turkish research emphasizing that pre-service teachers hold multiple curriculum orientations simultaneously (Bay et al., 2012) and that these orientations relate to critical thinking dispositions (Tanrıverdi & Apak, 2014). The independence of curriculum theory

orientations suggests a need for teacher education approaches that help pre-service teachers develop sophisticated, flexible theoretical frameworks rather than advocacy for singular perspectives. By understanding multiple theoretical orientations and their appropriate applications, teachers can more effectively navigate the diverse and dynamic challenges of contemporary education.

Future research should examine how these orientations develop throughout teacher preparation programs, how they relate to actual teaching practices in diverse educational settings, and whether interventions can help pre-service teachers develop greater sophistication in understanding when and how to employ different theoretical perspectives. Understanding the relationship between theoretical orientations formed during pre-service education and subsequent teaching behaviors will help refine teacher education curricula to better prepare teachers for the complex demands of contemporary classrooms.

Recommendations

Based on the findings of this study, it is recommended that teacher education programs deliberately design curriculum theory courses and pedagogical experiences that strengthen pre-service teachers' capacity to flexibly integrate prescriptive, descriptive, and critical-exploratory orientations rather than privileging a single theoretical stance. In particular, coursework and practicum experiences should explicitly model how structured curriculum frameworks can be adapted through contextual analysis and critical reflection to address diverse student needs and socio-cultural realities. Faculty may consider incorporating case-based learning, reflective journals, and guided field observations that require pre-service teachers to justify curriculum decisions using multiple theoretical perspectives. Additionally, longitudinal monitoring of curriculum theory orientations across different stages of teacher preparation is recommended to better understand how these beliefs evolve and to identify critical intervention points within programs. Finally, future studies should extend this research by including multiple institutions and mixed-method designs to examine how espoused curriculum orientations translate into actual classroom practices, thereby providing stronger empirical guidance for curriculum and policy development in teacher education.

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Investigation of Student Opinions on Method Technique Diversity in Social Studies Teaching

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Abstract: This study aims to examine the effects of the diversity of teaching methods and techniques used in Social Studies courses on students' learning processes and to explore students' views within this context. The study evaluates the contributions of methodological diversity to students' interest in the course, learning motivation, and academic performance. In addition, the limitations of these methods are identified, and suggestions for improvement are presented. Designed as a qualitative study, the research data were collected through focus group interviews and analyzed using the thematic analysis method. The findings indicate that increasing the use of visual and auditory materials, promoting project-based activities, and incorporating social and cultural activities contribute positively to students' learning processes. The results further reveal that students particularly favor methods such as visual materials, video-supported learning, and group work. Historical films, museum visits, and project-based activities were found to be effective in enhancing students' interest in the course. Students emphasized establishing real-life connections and acquiring knowledge applicable to daily life as key contributions to their learning.

Keywords: Social Studies Education; Diversity of Teaching Methods

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Introduction

Education is the process of fostering desired behaviors in individuals through lived experiences and constitutes an indispensable necessity for societies. Through this process, acquired knowledge becomes more meaningful and enduring (Ciddi, 2025; Memişoğlu & Tarhan, 2016; Öztürk, 2023; Tekin, 2025). Contemporary education and instructional systems aim to cultivate individuals equipped with the competencies required by the demands of the present era (Ünal, 2024; Yaylak, 2020). The teaching–learning process is structured through the implementation of learning outcomes specified in curricula by employing various approaches, strategies, methods, and techniques, and it is shaped by the interaction between teachers and students (Avcı, 2021; Çakır et

al., 2019; Gulnar, 2025; Ozkan, 2023; Ozturk & Susuz, 2023; Öztürk et al., 2023).

In today's information age, one of the fundamental responsibilities of education is not merely to transmit knowledge, but to teach learners how to access information and how to use it effectively (Coskun, 2025; Kara, 2020; Kibici, 2022; Kilinçer, 2021; Memişoğlu & Tarhan, 2016; Ozturk & Ozturk, 2022, 2024; Özdemir, 2022). Social Studies can be defined as a multidisciplinary subject that aims to educate active and responsible citizens who are aware of their duties, capable of producing solutions to societal problems, and able to contribute positively to their communities (Evci & Yeşiltaş, 2023). As a school subject, Social Studies stands independently and possesses the capacity to help students develop abstract thinking skills necessary for effective social integration (Emmideme, 2023).

Social Studies integrates various social science disciplines such as history, geography, law, political science, economics, philosophy, sociology, social psychology, archaeology, and anthropology (Şen, 2023). It encompasses concepts derived from multiple fields, including history, geography, citizenship, law, archaeology, anthropology, philosophy, psychology, and sociology (Çelik & Yıldırım, 2022). Ensuring that these concepts and topics are taught in a lasting and effective manner is of critical importance for achieving the national and international objectives of Social Studies education (Çelik & Yıldırım, 2022).

As students progress in Social Studies education, they employ skills such as critical thinking, self-assessment, reasoning, problem solving, collaboration, research, and inquiry to establish connections through innovative and meaningful approaches (Emmideme, 2023). Through Social Studies courses, students not only learn to address real-life problems but also develop an understanding of the significance of being responsible citizens (Öztürk & Korkmaz, 2020). The continuous expansion of knowledge has demonstrated that merely transferring information through traditional instructional methods is insufficient. Consequently, educational models that enable students to structure acquired knowledge and transform it into new learning experiences have been developed (Memişoğlu & Tarhan, 2016).

Instruction, in one sense, refers to the implementation of the curriculum within the school environment. During this process, specific principles, methods, and techniques are required to ensure that students effectively acquire the skills and competencies outlined in curricular objectives and develop permanent behavioral changes (Çelikkaya & Kuş, 2009). Since the 2005–2006 academic year, the Social Studies curriculum based on the constructivist approach has emphasized a total of fifteen skills, including 21st-century competencies such as critical thinking, research, creative thinking, decision making, communication, problem solving, entrepreneurship, information technology use, spatial perception, effective use of the Turkish language, understanding change and continuity, observation, time and chronology perception, social participation, and empathy (Kanat & Çetin, 2021).

Within this framework, individuals cannot be considered independent of their socio-cultural environments and life experiences. Therefore, the context in which learners interpret, internalize, and construct knowledge plays a

crucial role in the learning process (Taş & Akoğlu, 2020). Learner-centered education is defined as an approach in which learners assume a more active role in the educational process and share responsibility for learning with teachers (Yağan, 2022). Meaningful and permanent learning can be achieved by employing appropriate teaching methods and techniques that clearly demonstrate concepts and the relationships among them (Memişoğlu & Tarhan, 2016). This approach also contributes to the development of social and cultural values as well as essential skills (Evci & Yeşiltaş, 2023).

In learner-centered models, teachers function as facilitators who guide learning rather than merely transmit knowledge. By reducing direct instruction and encouraging students to explore and discover, teachers create learning environments that promote deeper understanding (Yağan, 2022). For knowledge to become permanent, it must be transformed into skills (Şentürk, 2021; Ünal & Demirel, 2024). Skills are generally defined as abilities acquired through education and experience, and their transformation into life practices is considered essential (Şentürk, 2021). In Social Studies courses, students are encouraged to confront real-life problems, thereby developing skills such as problem solving, critical and creative thinking, sharing proposed solutions, collaboration, and active participation in discussions (Bayır, 2010).

The achievement of the intended objectives of Social Studies education largely depends on teachers' effective use of appropriate teaching methods, techniques, and instructional technologies, as well as their ability to diversify these methods according to individual differences among students (Öztürk & Korkmaz, 2020). Students' perceptions of a course significantly influence their engagement and interest (Frempong, 2022). However, educators often neglect to employ a variety of instructional methods and techniques (Russell & Waters, 2010). Instead of encouraging critical thinking, teachers tend to rely on activities that promote the memorization of names, dates, and places (Russell & Waters, 2010). Although students are the primary beneficiaries of instructional practices, there is a limited number of studies that examine students' perspectives on which teaching methods are most appropriate in Social Studies education (Frempong, 2022).

The Social Studies Curriculum emphasizes that a wide range of teaching methods and techniques can be employed in the teaching–learning process, including creative drama, lecturing, question–answer, field trips and observations, project-based learning, discussions, demonstrations, case studies, role-playing, problem solving, and group work (Öztürk & Korkmaz, 2020). Within this instructional framework, teachers are expected to serve as facilitators who support students' active participation and discovery-based learning (Yağan, 2022).

Method

Research Design

This study employed a qualitative research design, specifically a case study approach, to explore students' views on the diversity of teaching methods and techniques used in Social Studies courses. Case studies are in-depth investigations that focus on a particular individual, event, or institution over an extended period and provide rich, contextualized insights rather than relying on complex statistical analyses (Paker, 2015). With the

increasing prevalence of qualitative research, the case study design has become widely used across disciplines such as education, sociology, psychology, business, and health sciences (Çapar & Ceylan, 2022).

The focus group interview method was utilized as the primary data collection technique. Focus group interviews are qualitative data collection methods conducted in line with predetermined guiding questions and emphasize participants' individual experiences and perspectives while considering their discourse within a social context (Çokluk et al., 2011). Due to their interactive structure, focus group interviews enable in-depth analysis and the generation of meaningful interpretations through group dynamics (Karaman, 2021). In this study, data were recorded in written form by a rapporteur. This design was considered appropriate for understanding how diversity in teaching methods and techniques influences students' learning experiences in Social Studies education.

Participants

The study group consisted of eight middle school students enrolled in the 5th, 6th, 7th, and 8th grades of a public middle school. Two students from each grade level were included in the sample. Participants were selected using the convenience sampling method, which was preferred due to ease of access to the research setting and time constraints. During the participant selection process, attention was paid to achieving balance in terms of gender and grade level, with the aim of representing diverse perspectives.

Data Collection

Data were collected using a semi-structured interview form designed to examine students' perceptions of the teaching methods and techniques used in Social Studies courses, their interest in the course, and the contribution of these methods to their learning processes. The focus group interviews were conducted on a voluntary basis in a quiet classroom environment within the school setting.

Prior to data collection, participants were informed about the purpose of the study, confidentiality principles were explained, and written consent was obtained. All interviews were audio-recorded with participants' permission and subsequently transcribed verbatim. To assess the validity and applicability of the data collection instrument, a pilot study was conducted with two participants. Necessary revisions were made based on the pilot results before proceeding with the main interviews.

Data Analysis

The collected data were analyzed using thematic analysis, a qualitative data analysis method used to identify, analyze, and report patterns (themes) within the data (Çarıkcı et al., 2024). The analysis process involved systematically coding participants' responses and organizing these codes into broader themes based on similarities and relationships.

The data analysis was conducted through the following steps:

1. Transcription of audio recordings.
2. Repeated reading of the transcripts to identify salient statements.
3. Coding of meaningful data segments.
4. Categorization of codes and identification of overarching themes.
5. Inclusion of representative student quotations for each theme.
6. Verification of the alignment between identified themes and the research objectives, followed by the preparation of the final report.

Results

As a result of the focus group interviews, five main themes emerged from the data analysis: preferred teaching methods and techniques, enhancement of interest in the course, factors contributing to learning, recommended alternative activities, and advantages of group and individual work.

Preferred Teaching Methods and Activities

One of the main themes identified through the analysis was preferred teaching methods and techniques. The codes derived from the findings are presented in Table 1.

Table 1. Preferred Teaching Methods and Techniques

Code	Frequency	Percentage
Visual and Video-Supported Methods	6	75.0
Project-Based and Group Work	3	37.5
Writing-Based Activities and Worksheets	2	25.0

The analysis revealed that visual and video-supported methods were the most frequently preferred instructional practices. Visual and auditory materials were found to be effective in capturing students' attention and enhancing the permanence of learning. One participant (S1) stated:

> "Visual teaching methods are more efficient for me. I think videos and visuals shown on the smart board are more effective."

Other students expressed similar views:

> "I think learning through visuals and videos is more memorable and engaging, so I prefer these methods." (S2)
>
> "Project work allows me to discover new things together with my friends." (S8)

Enhancement of Interest in the Course

Another major theme identified was the enhancement of interest in the course. The codes related to this theme

are presented in Table 2.

Table 2. Factors Enhancing Interest in the Course

Code	Frequency	Percentage
Social and Cultural Activities	6	75.0
Historical Films and Videos	5	62.5
Research and Project-Based Activities	2	25.0

The findings indicate that students largely agreed that these activities increased their interest in the Social Studies course. One participant (S4) noted:

> "I think engaging in social activities during lessons is more effective because organizing museum visits creates a pleasant environment and makes learning more enjoyable and memorable."

Historical films and videos were also frequently mentioned:

> "I think we can watch historical videos and films and also visit museums." (S3)
>
> "When we research a topic and it appears on another exam, the videos we watched help us understand the topic more easily." (S7)

Overall, these findings suggest that social activities enrich the learning experience and have a positive impact on students.

Activities Contributing to Learning

Another theme identified through the analysis was factors contributing to learning. The relevant codes are presented in Table 3.

Table 3. Activities Contributing to Learning

Code	Frequency	Percentage
Facilitating Learning	8	100.0
Establishing Real-Life Connections	5	62.5
Knowledge Applicable to Daily Life	3	37.5

All participants agreed that facilitating learning was a significant contribution of instructional activities. One student (S5) expressed this view as follows:

> "It contributes to learning because it does not strain our brains."
>
> Establishing real-life connections was also emphasized:
>
> "We can relate what we learn in class to daily life, improve our general knowledge, and learn about the history of our own country and other countries." (S2)

Additional student statements included:

> "When information is presented in an easily understandable way, such as through videos, we learn better." (S5)

"Writing all the time can be boring, but when we use different activities like test books or watching the news, I understand more easily." (S7)

These findings highlight the importance of learning activities that simplify understanding and connect academic content to real-life experiences.

Recommended Alternative Activities

The theme recommended alternative activities was also identified. The codes related to this theme are presented in Table 4.

Table 4. Recommended Alternative Activities

Code	Frequency	Percentage
Museum and Historical Site Visits	6	75.0
Social Activities and Theatrical Performances	5	62.5
Theatre Activities	3	37.5
Music-Based Learning Activities	2	25.0
Technology-Supported Competitions	2	25.0
Map and Atlas Activities	2	25.0
Model Construction	1	12.5
Visual-Based Classroom Activities	1	12.5

Museum and historical site visits were the most frequently recommended activities. One participant (S8) stated:

"For example, trips can be organized to historical sites or museums where historical objects are exhibited."

Another student emphasized the limitations of textbook-based instruction:

"Studying only from textbooks is very boring. Learning through museum visits, films, theatres, and atlases would be much more effective." (S3)

Other supporting views included:

"Organizing museum visits and theatre performances involving students, preparing visual posters, watching educational documentaries, and visiting historical places contribute more to learning." (S2)

"I understand topics more enjoyably through music-based learning or educational films. We could also draw maps or create three-dimensional projects related to historical artifacts." (S7)

These findings indicate that museum and historical site visits were the most frequently suggested activities, followed by social activities and theatrical performances.

Advantages of Group and Individual Work

The final theme identified was the advantages of group and individual work. The relevant codes are presented in Table 5.

Table 5. Advantages of Group and Individual Work

Code	Frequency	Percentage
Group Work (Idea Exchange and Social Interaction)	6	75.0
Individual Work (In-Depth Learning)	2	25.0

The majority of students preferred group work, emphasizing its role in fostering collaboration and social interaction. One participant (S3) stated:

> "I find group work more useful because it increases cooperation and solidarity among students. I prefer group work."

Another student expressed:

> "When we work on projects with friends, listening to others' ideas helps us improve our work. We benefit from their thoughts and knowledge, so we both have fun and learn." (S8)

Additional supporting statements included:

> "I find group work more efficient and effective. It helps develop my creativity." (S4)
>
> "Having more people in group work means more ideas and perspectives. This allows us to learn new information and exchange ideas, making learning more interesting and effective." (S1)

Overall, the findings indicate that group work is an effective instructional method for developing students' collaboration and social skills.

Discussion, Conclusion, and Recommendations

Discussion

This study was conducted to examine the effects of the diversity of teaching methods and techniques used in Social Studies courses on students' learning processes. Data obtained through focus group interviews revealed how various instructional practices influence students' interest, motivation, and academic engagement. The findings indicate that students benefit most from visual and auditory materials, group work, and project-based learning. In addition, instructional practices such as historical films, museum visits, and social and cultural activities were found to positively influence students' attitudes toward the course.

These findings are largely consistent with the existing literature. Recent transformations in educational practices have shifted learning paradigms toward student-centered approaches that emphasize active participation (Doğan, 2013). Previous studies have similarly demonstrated that collaborative and application-based instructional strategies enhance the meaningfulness and permanence of learning experiences. The use of visual and auditory materials has been shown to contribute to more effective and lasting learning by increasing students' attention and engagement (İlhan, 2011). Consistent with earlier research, students in this study reported higher levels of interaction and idea exchange during group work compared to individual learning activities.

However, while group-based instruction was generally preferred, some students highlighted the importance of individual learning for reinforcing understanding. This finding underscores the need for balanced instructional

designs that address diverse learning styles and individual differences. Differentiated instruction strategies are particularly important for meeting the varied academic and social needs of learners from diverse backgrounds (Haçat et al., 2023). Furthermore, studies by Kuru (2022) indicate that the integration of visual and auditory materials significantly enhances students' interest and supports long-term learning outcomes.

In today's globalized world, possessing only basic skills is no longer sufficient for individuals to adapt successfully and maintain a high quality of life. Learners must also acquire advanced competencies known as 21st-century skills, including critical thinking, collaboration, creativity, and problem solving (Ülger, 2019). In line with constructivist principles, learning environments that position students as active participants were found to be more effective in fostering these skills.

From a broader perspective, contemporary societies aim to educate individuals who are inquisitive, critical thinkers capable of accessing and evaluating information, solving problems, collaborating effectively, communicating efficiently, demonstrating creativity and empathy, and upholding democratic values (Karaduman, 2005). Social Studies education plays a critical role in cultivating these competencies by encouraging students to analyze social, economic, and political issues from multiple perspectives and to assume active roles as future citizens (Ersoy & Kaya, 2009).

Conclusion

The findings of this study demonstrate that reliance solely on traditional lecture-based instruction is insufficient in meeting students' learning needs in Social Studies education. Students expressed a clear need for diversified, student-centered instructional approaches that actively support their learning processes. In particular, the effective use of technology-supported instructional tools emerged as a key factor contributing positively to students' engagement and learning outcomes. The results also indicate that increased use of technology in classroom instruction fosters positive attitudes toward the course and enhances student engagement. Previous research has similarly identified a positive and significant relationship between technology use and student engagement levels (Günüç, 2013). These findings further support the notion that students possess diverse learning styles, which necessitates the implementation of varied instructional strategies. Moreover, effective learning environments should not be limited to classroom-based activities but should also incorporate extracurricular and experiential learning opportunities. Field trips, museum visits, and social activities were found to enrich students' learning experiences and promote deeper understanding (Karakaş & Şahin, 2017).

Recommendations

Based on the findings of this study, the following recommendations are proposed to enhance the effectiveness of Social Studies instruction:

1. *Increase the use of visual and auditory materials.*
   Teachers should integrate historical films, documentaries, and video-supported instructional materials

into lesson content to promote deeper understanding and retention.

2. *Expand social and cultural activities.*
   Educational programs should incorporate museum visits, historical site tours, and theatrical performances to support experiential learning and increase student engagement.
3. *Maintain a balance between group and individual work.*
   While group work encourages collaboration and idea exchange, individual learning activities remain essential for reinforcing personal understanding. Instructional planning should reflect this balance.
4. *Develop technology-supported learning environments.*
   Tools such as smart boards, virtual museum tours, interactive maps, and digital learning platforms should be more widely integrated into Social Studies instruction. In-service training programs should be expanded to support teachers' effective use of these technologies.
5. *Promote drama- and game-based learning strategies.*
   Role-playing historical events, game-based learning activities, and theatrical applications can enhance student motivation and engagement.
6. *Collect regular student feedback.*
   Students' feedback should be systematically gathered to evaluate the effectiveness of teaching methods and to guide instructional improvements.
7. *Strengthen in-service teacher training programs.*
   Universities and professional development initiatives should place greater emphasis on methodological diversity to equip both preservice and in-service teachers with the necessary instructional competencies.

These recommendations aim to improve not only students' academic achievement but also the overall effectiveness, efficiency, and sustainability of Social Studies education. Future research may further examine the impact of diverse instructional strategies across different educational levels and contexts to provide more generalizable insights.

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Science Education and Cultural Sustainability: A Bibliometric Study of the Last Two Decades

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Abstract: This study investigates culturally sustaining pedagogy (CSP) in science education through a bibliometric approach, providing a comprehensive analysis of global research trends over the past two decades. The primary objective is to identify trends, key themes, and research gaps within this evolving field. Using the Systematic Literature Review method guided by the PRISMA framework, data were systematically extracted from the Scopus database to analyze relevant publications. The findings reveal CSP's strong association with themes such as "science education," "culturally responsive pedagogy," and "STEM education." Additionally, CSP is closely linked to concepts like "equity," "inclusion," "indigenous knowledge," and "multicultural education," underscoring its role in preserving learners' cultural identities while fostering equity and diversity. The study concludes that CSP is a growing and vital framework addressing the need for inclusive and culturally relevant teaching practices. These findings have significant implications for educators, researchers, and policymakers, emphasizing CSP's potential to enhance equity, engagement, and the integration of diverse cultural perspectives in science education.

Keywords: Culturally sustaining pedagogy, science education, bibliometric analysis, STEM education, indigenous knowledge.

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Introduction

With the adoption of the 2030 Sustainable Development Agenda (SDGs) the international community is committed to addressing a large number of challenges (Mishra et al., 2023)many of which directly affect the lives of traditional communities (Magni, 2017). Their knowledge systems and skills that are deeply rooted in harmonious relationships with nature have proven effective in addressing some of these challenges (Seehawer & Breidlid, 2021). Science education as a means to understand and respond to the challenges of the global environment has developed dynamically in the era of 21st century progress. (Cirkony et al., 2023; Rahmawati et al., 2020)..

Efforts to harmonize the Western scientific paradigm with traditional wisdom held by traditional societies or Indigenous Knowledge (IK) are increasingly becoming the main focus in designing holistic and sustainable educational approaches (Chandra, 2014; De-Abreu et al., 2022; Evering, 2019). Globally, indigenous knowledge (IK) has been shown to be an important factor in sustainable development. (López-Quiñones et al., 2023; Zidny et al., 2020, 2022). and STEM education (Eglash, Bennett, et al., 2020; López-Quiñones et al., 2023; Marker, 2019a; Sumarni et al., 2022).

Despite the recognized importance of cultural sustainability in education, there is still a gap between policy and implementation. Many educational systems prioritize standardized curricula that do not sufficiently accommodate diverse cultural perspectives (Vue, 2023). This has led to a decline in students' engagement with science, particularly among indigenous and rural communities, where scientific knowledge is often perceived as disconnected from local traditions (Taeao & Averill, 2021). Additionally, with the rapid advancement of technology, there is a growing concern that traditional ecological knowledge (TEK) is being eroded, further widening the gap between science education and cultural sustainability (Volk & Miller, 2020).

Several studies have explored the relationship between science education and cultural sustainability. Funk & Woodroffe (2024) examined indigenous knowledge integration in science curricula and found that culturally relevant pedagogy enhances students' engagement and comprehension. Similarly, Smith et al. (2022) highlighted how indigenous ecological knowledge can provide alternative frameworks for understanding scientific concepts. However, despite these contributions, many existing studies are limited in scope, often focusing on single case studies or specific regions, making it difficult to generalize findings. Additionally, bibliometric analyses in this field remain scarce, with most reviews being qualitative rather than quantitatively mapping research trends and knowledge gaps.

This study addresses the gap by conducting a bibliometric analysis of research on science education and cultural sustainability over the past two decades. Unlike previous qualitative reviews, this study utilizes advanced bibliometric techniques, including co-citation analysis, keyword mapping, and network visualization, to provide a comprehensive overview of research trends, influential authors, and emerging themes. By systematically analyzing the existing literature, this study offers new insights into the evolution of this interdisciplinary field

and highlights areas requiring further investigation.

The primary aim of this study is to examine the global research landscape on science education and cultural sustainability using bibliometric methods. The specific research questions are:

1. What are the publication trends, key journals, and most influential researchers in the field of science education and cultural sustainability?
2. How has the thematic focus of research on science education and cultural sustainability evolved over time?
3. What research gaps exist in the current literature on science education and cultural sustainability, and what are the potential directions for future studies?

Method

This study used the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta- Analyses) method in figure 1 to identify, evaluate, and synthesize literature related to trends and research frontiers in Socioscientific Issues (SSI) for Continuing Science Education using the steps of the bibliometric analysis process described by Pham-Duc et al. (2020) dan Tuyet et al. (2024).

Data Collection

Table 1 provides an overview of the search terms utilized in the Scopus and ERIC databases to find studies focused culturally sustaining pedagogy (CSP) in science education for sustainability. The searches aimed to identify a variety of research that explored the role of CSP in science education and its impact on sustainable development.

Table 1. The Specific Search in the Scopus Databases

Search Term(s) in the Scopus
TITLE-ABS-KEY (culturally AND sustaining AND science AND education) AND PUBYEAR > 2013 AND PUBYEAR < 2025

Data Extraction

After identifying relevant sources, a selection was made by applying the pre-defined inclusion and exclusion criteria as in table 2. These criteria included certain aspects that supported the research objectives and the defined scope of the study. The selection process was then followed by data extraction from the selected articles. Collecting relevant information related to indigenous knowledge in science education for sustainable development.

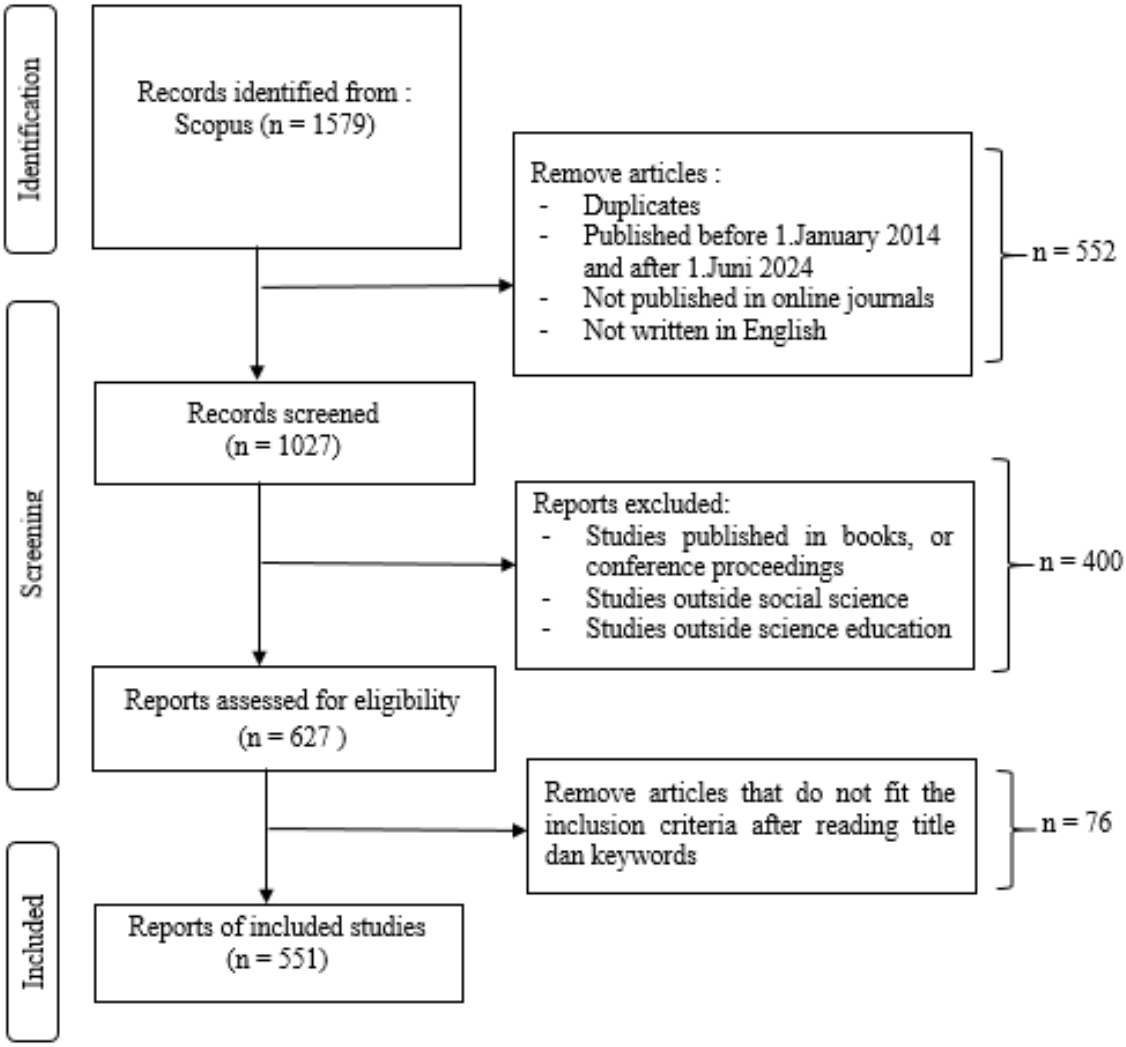

Figure 1. PRISMA Flow Diagram

Data Analysis

Data analysis was conducted using bibliometric methods. This includes counting the number of publications each year, keyword analysis to identify research trends, and citation analysis to evaluate the impact of research. This analysis not only provides a comprehensive picture of the current research landscape but also offers strategic insights for future research and education policy (Grosseck et al., 2019).

Thematic maps and keyword clouds can be used to identify key themes and sub-themes developing in the literature on CSP. The VOSviewer (www.vosviewer.com) and Bibioshiny software (using the “bibliometrix” package of the R studio software to install) were used to analyze and graph the data obtained on publication networks, collaboration networks between researchers, participating organizations, main and emerging keywords in Socioscientific Issues (SSI) research in sustainable science education.

Table 2. Search Keywords and Inclusion/exclusion Criteria

Category	Inclusion Criteria	Exclusion Criteria
Publication period	Studies published from January 2014 to June 2024	Studies published before January 2014
Language of publication	Full-text available in English	Full-text available in other languages
Study Materials	Studies published in peer-reviewed journals rated in Scimago Journal	Studies published in books, chapter or conference proceedings
Document Type	Studies conducted in science education fields	Studies outside science education (such as those in medical, nurse, therapy, rehabilitation, or gaming fields)
Subject area	Social Science	Studies outside social science (such as Business, Management, Accounting, and Linguistics)

Interpretation of Results

The results of the bibliometric analysis provide insights into research trends and frontiers in SSI for sustainable science education. From this analysis, we can infer key developments in the field, such as the increasing focus on student engagement in science-based decision-making and the integration of environmental issues in the science curriculum. These conclusions also help identify existing research gaps and direct future research agendas.

Results and Discussion

Main Information

Based on bibliometric data collected from 2014 to 2025, there was moderate growth in the production of scientific articles with an annual growth rate of 1.84%. The majority of articles published were collaborative works, shown by an average of 2.74 authors per article and only 182 out of 551 articles were written by single authors. Interestingly, although collaboration is the norm, the international collaboration rate only reached 7.441%, indicating that most collaborations occur within the national or regional scope.

In terms of publication age, the average document age was 3.95 years, suggesting that more recent research tends to be more heavily cited. This is supported by the citation data, which shows an average of 10.72 citations per article. This finding underscores the importance of relevant and current research in the academic landscape. In addition, keyword analysis revealed 500 “Keywords Plus” keywords and 1649 author-provided keywords, providing an in-depth look at the research focus and trends in the time period. Overall, this data provides valuable insights into the dynamics of scientific publications, collaborations and research trends from 2014 to 2025.

Table 3. General Information on CSP Research Publications in Science Education

Description	Results
Main Information About Data	
Timespan	2014:2025
Sources (Journals, Books, etc)	295
Documents	551
Annual Growth Rate %	1.84
Document Average Age	3.95
Average citations per doc	10.72
References	26323
Document Contents	
Keywords Plus (ID)	500
Author's Keywords (DE)	1649
AUTHORS	
Authors	1388
Authors of single-authored docs	174
Authors Collaboration	
Single-authored docs	182
Co-Authors per Doc	2.74
International co-authorships %	7.441
Document Types	
Article	551

Publication Trends

The publication trends from 2014 to 2025 indicate a significant and continuous rise in research interest surrounding science education and cultural sustainability. In the early years, from 2014 to 2016, the number of published articles remained relatively low, with only 9 articles in 2014, increasing slightly to 14 articles in both 2015 and 2016. This suggests that while the topic had already gained some academic attention, it was still in its formative stages, likely focused on theoretical discussions and conceptual development. However, from 2017 onwards, there was a noticeable surge, with 23 articles in 2017 and 25 in 2018, indicating growing recognition of the relevance of culturally sustaining pedagogy in science education.

A more pronounced increase occurred in 2019, when the number of published articles nearly doubled to 43, followed by an even sharper rise in 2020, reaching 79 publications. This significant jump suggests an increased global awareness and urgency in addressing cultural sustainability in education, possibly influenced by broader discussions on equity, inclusion, and diversity in educational policies. The pandemic period in 2020 and 2021 saw fluctuating but still high numbers, with 79 articles in 2020 and a slight decline to 68 in 2021, reflecting a temporary shift in research priorities due to the COVID-19 crisis. However, this dip was short-lived, as 2022

recorded 88 publications, followed by 87 in 2023 and a peak of 90 in 2024, confirming sustained and growing interest in the field.

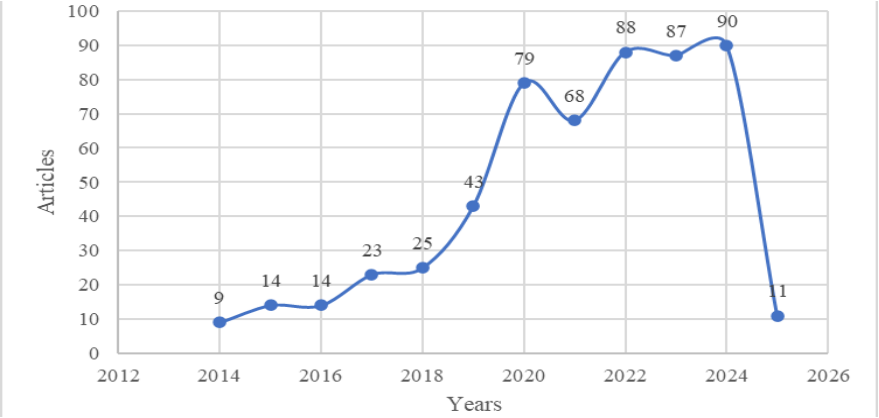

Figure 2. Annual Scientific Production

The data for 2025, with only 11 articles so far, suggests that the full year's publication count is still in progress and will likely increase as more studies are published. This trend demonstrates that research in science education and cultural sustainability has moved from a niche academic interest to a well-established and actively expanding field. The rapid growth, particularly in the last five years, highlights the increasing emphasis on culturally relevant teaching strategies, multilingual education, social justice in science education, and the integration of indigenous knowledge. Moving forward, these trends indicate that the field will continue to evolve, with a strong focus on policy impact, teacher education, and assessment of culturally sustaining pedagogies in diverse educational settings.

Identify the Journals that Publish the Most Related Articles

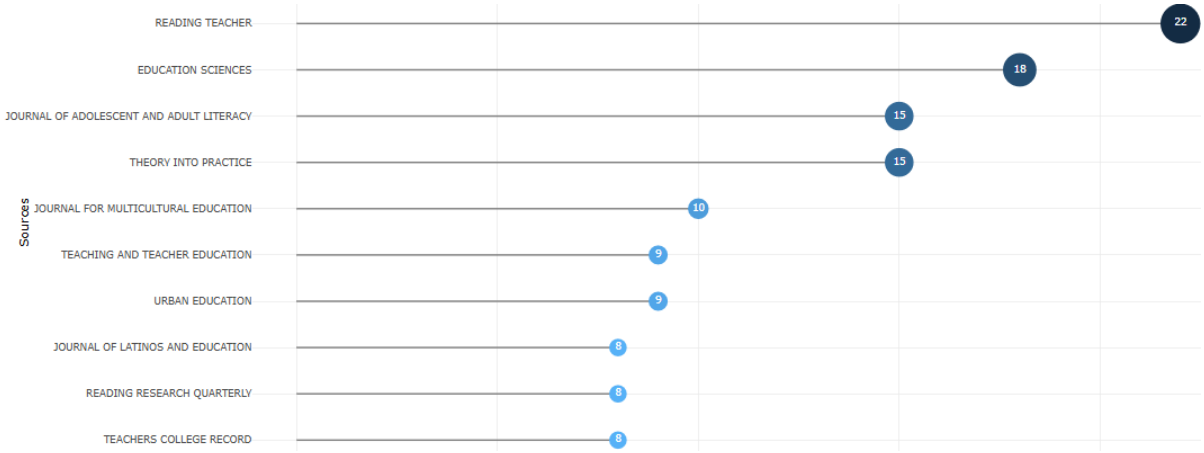

Figure 3. Top-10 Most Frequently Published Sources Ranked by Number of Publications

Figure 3 presents a list of the 10 most frequently appearing publication sources, sorted by number of

publications. “Reading Teacher” stands out as the most prolific source with 22 publications, followed by ‘Education Sciences’ with 18 publications. Some other journals such as “Journal of Adolescent and Adult Literacy” and “Theory into Practice” have 15 publications each. Other sources on this list, including “Teaching and Teacher Education” and “Urban Education”, have fewer publications but are still significant in their contribution to the literature under study. Overall, this list provides an overview of the relevant publication landscape in this field, highlighting the main sources of research focus and scholarly contributions. This data can be an important reference for researchers and academics looking to find relevant literature or considering the right journals to publish their scholarly work in.

The Most Prolific and Influential Authors

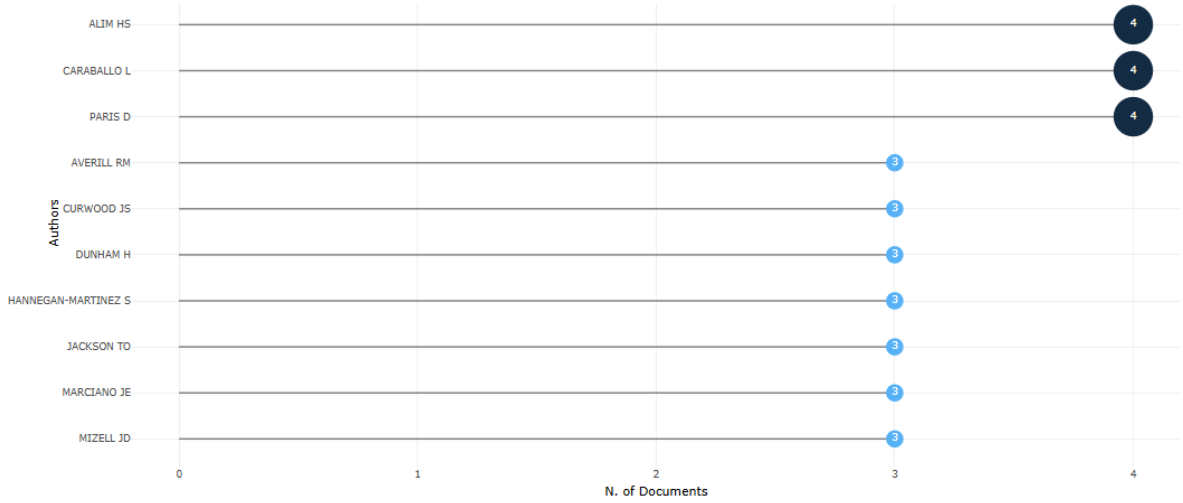

Figure 4. Most Influential Researchers

Figure 4 presents a list of the 10 authors who published the most articles, sorted by number of publications. The top three authors, ALIM HS, CARABALLO L, and PARIS D, have the same number of publications, 4. Meanwhile, the remaining 7 authors have fewer publications, 3. This data shows that the top three authors are very active contributors to the field, with a significant number of publications compared to other authors. However, the other authors on this list also made important contributions, with 3 articles published each. Overall, this list provides an overview of the most influential and active authors in the field, based on their number of publications. This information can be useful for researchers and academics who want to find out more about each author's contribution to this topic.

Thematic Evolution in Science Education and Cultural Sustainability

The thematic evolution of science education and cultural sustainability, as depicted in the diagram, illustrates significant shifts in research focus over the past decade. Between 2014 and 2020, dominant themes included *culturally sustaining pedagogies*, *identity*, *gender*, *participatory action research*, *indigenous knowledge*, *culturally responsive teaching*, and *cultural competence*. This period emphasized the foundational aspects of

integrating cultural elements into educational frameworks, with a strong focus on *instructional strategies* that catered to diverse learners. *Narrative inquiry* also emerged as a key methodological approach for exploring educators' and students' experiences in culturally sustaining science education.

Moving into the 2021–2023 period, the focus of research evolved towards more contemporary educational challenges, reflecting the impact of global events and changing social paradigms. *Culturally sustaining pedagogy* remained a central theme, but it was now interwoven with emerging topics such as *multilingual learners*, *professional development*, and *assessment*, indicating a shift towards practical implementation and evaluation of pedagogical strategies. The presence of *COVID-19* as a research theme highlights how the pandemic influenced discussions on equity and inclusion in education. Additionally, *critical pedagogy*, *social justice*, and *early childhood education* became more prominent, suggesting an increasing emphasis on addressing systemic inequities and incorporating culturally relevant teaching approaches from the early years of schooling.

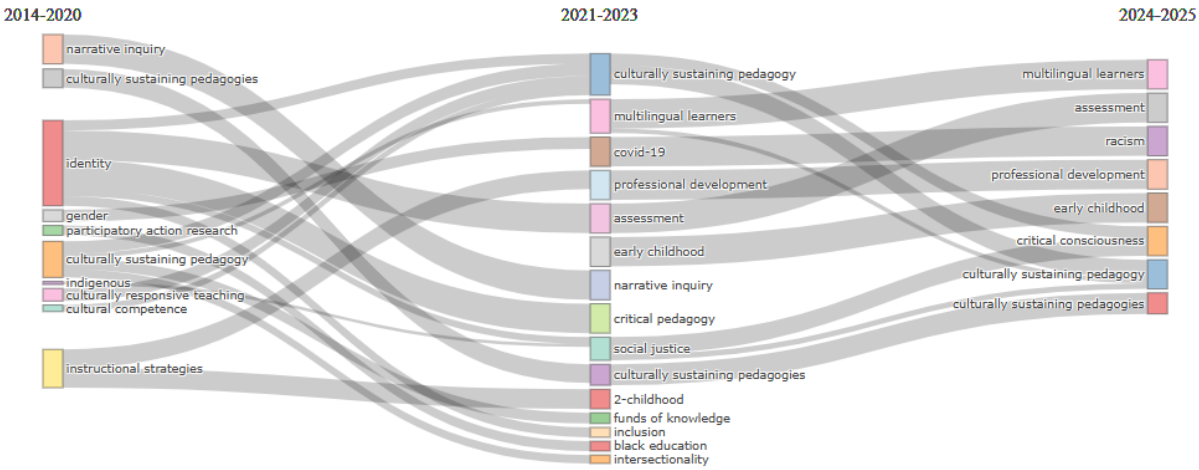

Figure 5. Thematic Evolution of CSP in Science Education (Source: Authors' own elaboration, using bibliometrix)

Looking ahead to 2024–2025, the thematic progression indicates a continued refinement and expansion of research areas. The recurring presence of *culturally sustaining pedagogy* signifies its established importance, but newer focal points such as *critical consciousness*, *black education*, *funds of knowledge*, *intersectionality*, and *racism* suggest a deeper engagement with social justice and equity issues. The shift towards *multilingual learners* and *assessment* also signals a growing interest in measuring the effectiveness of culturally sustaining practices and ensuring they support diverse linguistic and cultural backgrounds. The inclusion of *professional development* as a persistent theme highlights the need for equipping educators with the necessary skills to implement culturally sustaining pedagogies effectively.

Overall, the thematic evolution indicates a dynamic and expanding field that is transitioning from theoretical foundations toward practical application, assessment, and policy development. The increasing focus on equity-

driven frameworks, coupled with emerging considerations of race, language, and systemic barriers, suggests that future research will likely continue to explore how science education can be leveraged as a tool for fostering cultural sustainability and social transformation.

Research Gaps and Future Directions

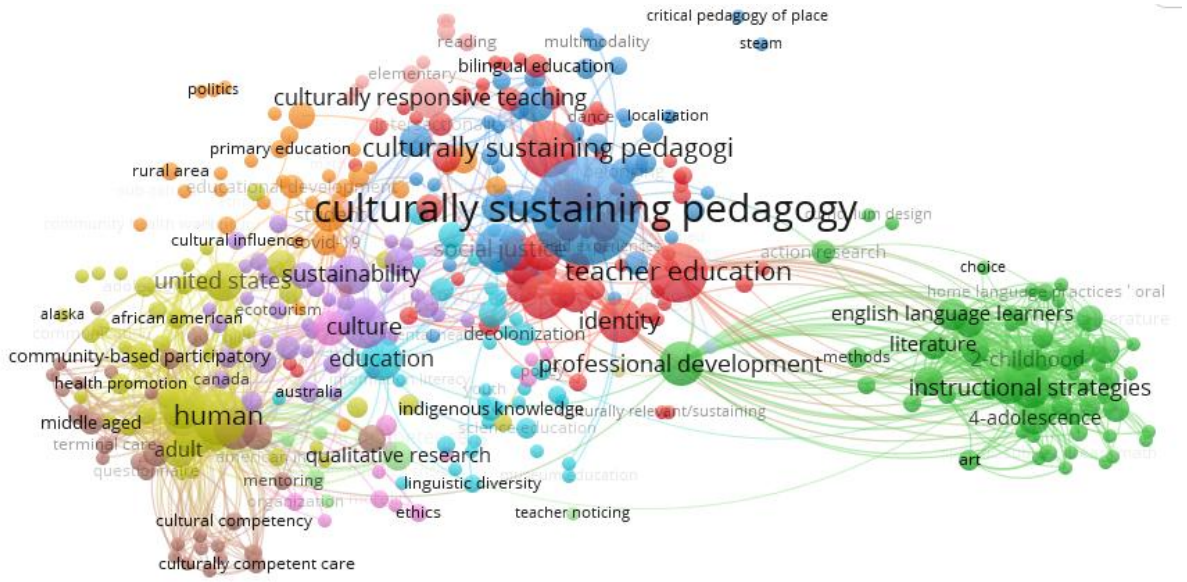

Figure 6. Clustering Research Themes in CSP in Science Education (Source: Authors' own elaboration, using VOSviewer)

Figure explain visualization of research related to Culturally Sustaining Pedagogy (CSP) that shows the interconnectedness of various concepts in the academic literature. The mapping shows that CSP has strong connections with social justice, teacher education and culturally diverse teaching strategies. The main clusters in this visualization indicate several important themes. The blue cluster, which is one of the most dominant, focuses on CSP and social justice in education, with keywords such as *culturally sustaining pedagogy*, *social justice*, *identity*, and *teacher education*. This suggests that much of the research in this area addresses how CSP can strengthen learners' cultural identity while ensuring equitable access to education.

In addition, the red cluster highlights the role of teacher education and curriculum decolonization, reflecting how teacher professional development is a key element in implementing CSP (Foulis & Gillen, 2024). This confirms that the transformation of culture-based pedagogy depends not only on curriculum design but also on teachers' readiness and competence in implementing it in the classroom (Caraballo, 2017). Meanwhile, the green cluster shows that CSP is also closely related to language teaching and learning *strategies*, where terms such as *instructional strategies*, *English language learners*, and *literature* appear as frequent themes in the literature. This indicates that CSP is often associated with teaching methods that adapt to students' linguistic and cultural backgrounds, especially in the context of multilingual education (Cheruvu, 2019; Rodriguez-Mojica et al., 2021). The purple cluster raises the dimensions of cultural sustainability and *indigenous knowledge*, as indicated

by keywords such as *sustainability*, *culture*, *education*, and *indigenous knowledge*. This underscores how CSP can play a role in preserving and integrating local cultural perspectives into learning. Meanwhile, the brown cluster illustrates the relationship between CSP and community participation in education, especially in the context of community-based research and health promotion (Boyd et al., 2022; Sarker & Paulson, 2023; Wang et al., 2022). The existence of this theme shows that CSP is not only applied in formal education, but also in the development of community-based programs to improve access and relevance of education (Bateman & McCausland, 2020; Jeong, 2021).

From this cluster analysis, it appears that science education has not been a major cluster in the CSP network, indicating a gap in research. Terms such as *science education* or *STEM education* did not emerge as dominant themes, indicating that CSP approaches are still more focused on aspects of social justice, cultural identity and teaching strategies than their integration in science education. In addition, the approaches used in CSP research still seem to be dominated by qualitative studies, with little connection to experiments or evidence-based interventions in science education. This suggests the need for further research that can bridge this gap by exploring how CSP can be applied more effectively in the science curriculum (Smith et al., 2022).

Furthermore, the lack of linkages between CSP and technology and STEM is also an indication that research in this area has not fully explored how culture-based approaches can be applied in technology-based science learning, virtual labs or inquiry-based learning (King et al., 2023). The map also does not show a strong connection between CSP and global issues such as climate change and environmental sustainability, which can be an important part of culture-based science education. Therefore, further research needs to integrate CSP into science learning that is oriented towards social justice, sustainability, and utilization of technology to create a more inclusive and meaningful learning experience for students from various cultural backgrounds.

Conclusion

This bibliometric study provides a comprehensive overview of the evolving research landscape in science education and cultural sustainability over the past two decades. The findings reveal a significant increase in scholarly attention to culturally sustaining pedagogy (CSP), particularly in the last five years, highlighting its growing importance in fostering inclusive and equitable science education. The thematic evolution from foundational concepts such as identity, indigenous knowledge, and instructional strategies to more applied themes like professional development, multilingual education, and assessment reflects a shift toward practical implementation and policy-driven research.

Despite this progress, several gaps remain in the field. While CSP has been extensively studied in terms of theoretical frameworks and teacher education, there is still a need for empirical research assessing its long-term impact on student learning, particularly in STEM disciplines. Additionally, the integration of CSP into national curricula and the development of standardized assessment tools require further exploration to ensure its effectiveness in diverse educational settings.

The implications of this study are far-reaching, emphasizing the need for interdisciplinary collaborations to bridge these gaps and further advance research in culturally sustaining science education. Policymakers and educators must work together to integrate CSP principles into teacher training programs and curriculum development to better serve diverse student populations. As global classrooms continue to diversify, the relevance of CSP will only increase, making it a critical area for future research and educational reform. By addressing these challenges and leveraging the insights from this study, the field can move towards a more inclusive, culturally responsive science education system that enhances equity, representation, and meaningful learning experiences for all learners.

Recommendations

Based on the findings of this bibliometric study, several recommendations are made to advance research and practice in science education and cultural sustainability. While theoretical discussions on culturally sustaining pedagogy (CSP) are well-established, there is a need for more empirical studies to evaluate its effectiveness in science education. Future research should focus on assessing CSP's impact on student learning outcomes, engagement, and scientific literacy, particularly in STEM disciplines. Additionally, there is a need for robust, evidence-based assessment frameworks to measure the effectiveness of culturally sustaining teaching approaches. Researchers and educators should collaborate to create standardized metrics that evaluate CSP's success in fostering equity, inclusion, and academic achievement in science education. Teacher education plays a crucial role in the successful implementation of CSP, so professional development programs must be designed to equip educators with the necessary skills, strategies, and cultural competencies. Workshops, certification programs, and in-service training should emphasize CSP's practical applications in science instruction. Policymakers and curriculum developers should work towards embedding CSP into national and regional science education standards to ensure that science instruction reflects diverse cultural perspectives, indigenous knowledge systems, and multilingual learning needs.

Future research should adopt an interdisciplinary approach by integrating perspectives from education, sociology, linguistics, and policy studies. Furthermore, cross-cultural and international collaborations can provide comparative insights into the implementation of CSP in different educational contexts, facilitating the development of globally relevant best practices. Given the increasing emphasis on multilingual learners, research should explore how CSP can be adapted to support students from diverse linguistic backgrounds. Investigating the role of home languages, bilingual education, and culturally responsive science curricula can enhance inclusivity in science classrooms. Finally, policymakers should be encouraged to support CSP initiatives through funding, legislative frameworks, and institutional policies. Future research should also examine how CSP can be sustained in educational systems beyond pilot programs or short-term interventions. By addressing these recommendations, researchers, educators, and policymakers can work collaboratively to create a more inclusive and culturally responsive science education system. These steps will not only enhance student engagement and learning outcomes but also contribute to the broader goal of educational equity and cultural sustainability in science education.

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Designing and Evaluating an AI-Integrated Curriculum for Teaching Methods Courses in Teacher Education

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Abstract: This study designed, implemented, and evaluated an AI-integrated curriculum module within the Teaching Principles and Methods course at Eskişehir Osmangazi University to enhance preservice teachers' competencies in pedagogical AI integration, creative instructional design, and critical AI literacy. This study employed a design-based research approach, involving 86 third-year preservice teachers from various departments during the 2024–2025 academic year. The six-week module included AI-assisted lesson planning, critical evaluation of AI outputs, and redesigning materials using ethical and pedagogical criteria. Data were collected through the AI Integration Competency Scale (adapted from TPACK), lesson plan rubrics, reflective journals, and focus group interviews. Quantitative results showed significant increases in overall AI integration competency ($t = 5.84$, $p < .001$), particularly in pedagogical adaptation and creative use. Participants demonstrated stronger ability to integrate AI tools into learner-centered designs while maintaining pedagogical alignment. Qualitative analyses revealed three themes: emerging pedagogical confidence, critical awareness of AI's limitations and bias, and enhanced instructional creativity. Students reported AI tools supported brainstorming, differentiation, and reflective thinking but emphasized the need for explicit ethical guidance and critical evaluation skills. Findings suggest that structured, pedagogy-centered AI integration can effectively prepare preservice teachers for technology-enhanced education. The study proposes a framework for embedding AI literacy and pedagogical innovation into teacher education curricula, offering implications for faculty design, teacher training, and curriculum reform.

Keywords: Generative AI, Preservice Teachers, Teacher Education, TPACK Framework, Instructional Design

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Introduction

The integration of artificial intelligence (AI) into educational settings represents a paradigmatic shift that is fundamentally transforming teaching and learning practices worldwide. As AI technologies, particularly generative AI tools like ChatGPT, Claude, and various educational AI assistants, become increasingly sophisticated and accessible, the educational landscape is experiencing unprecedented changes (Zawacki-Richter et al., 2019). This transformation necessitates a fundamental rethinking of teacher education programs to adequately prepare future educators for AI-enhanced classrooms.

Recent statistics demonstrate a rapid acceleration in teacher adoption of AI tools. Multiple sources report substantial increases in AI usage among teachers, with integration occurring across various instructional tasks including lesson planning, content creation, and assessment (Impact Research, 2023). However, this adoption often occurs without adequate preparation or formal training, highlighting a critical gap between technological availability and pedagogical readiness (Choi et al., 2023). The rapid proliferation of AI in education has created an urgent need for systematic approaches to teacher preparation that address both the technical and pedagogical dimensions of AI integration.

Teacher education programs face the challenge of preparing preservice teachers not only to use AI tools effectively but also to think critically about their implications, limitations, and ethical considerations. The UNESCO AI Competency Framework for Teachers emphasizes the need for educators to develop competencies across five key dimensions: human-centered mindset, ethics of AI, AI foundations and applications, AI pedagogy, and AI for professional learning (Miao & Çukurova, 2024). This comprehensive approach underscores that AI integration in education extends far beyond mere technical proficiency to encompass critical thinking, ethical reasoning, and pedagogical innovation.

The development of preservice teachers' AI literacy represents a complex challenge that intersects multiple domains of knowledge and skills. According to recent research, preservice teachers often express positive attitudes toward AI technologies but simultaneously report limited confidence in practical integration and a lack of comprehensive understanding of AI's capabilities and limitations (Ayanwale et al., 2024; Guan et al., 2025). This gap between attitude and confidence suggests the need for structured, pedagogically grounded approaches to AI integration in teacher education.

Furthermore, the emergence of generative AI has introduced new dimensions to the AI integration challenge. Unlike traditional educational technologies, generative AI tools can create novel content, provide personalized feedback, and engage in sophisticated interactions that blur the boundaries between human and machine-generated educational materials (Prilop et al., 2025). This capability offers tremendous opportunities for enhancing teaching and learning but also raises important questions about academic integrity, creativity, and the nature of educational work itself.

The current study addresses these challenges by developing and evaluating a comprehensive AI-integrated curriculum module designed specifically for teacher education contexts. By focusing on the intersection of AI integration, creative instructional design, and critical literacy, this research contributes to the growing body of knowledge on effective approaches to preparing teachers for AI-enhanced educational environments.

Research Questions

This study was guided by the following research questions:

1. How does participation in an AI-integrated curriculum module affect preservice teachers' AI

integration competencies?

2. What qualitative changes occur in preservice teachers' attitudes, confidence, and practices regarding AI integration in instruction?

3. How do preservice teachers perceive the role of AI tools in supporting creative instructional design and pedagogical innovation?

4. What factors facilitate or hinder effective AI integration in teaching methods courses?

Literature Review

AI Integration in Teacher Education

The integration of artificial intelligence into teacher education has gained significant attention in recent years, reflecting the broader trend of AI adoption in educational settings. A systematic review by Tan et al. (2025) examining research from 2015 to 2024 revealed a notable imbalance in focus, with 65% of studies concentrating on AI application in teaching and only 35% addressing AI's role in teacher professional development. This disparity highlights a critical need for research that addresses teachers' development needs for AI integration.

Recent studies have shown that preservice teachers generally hold positive attitudes toward AI technologies but often lack confidence in practical implementation. Research has found that while preservice teachers recognized the potential benefits of AI tools, they felt unprepared to integrate these technologies into their teaching practices effectively(Ayanwale et al., 2024; Guan et al., 2025). This finding underscores the importance of structured professional development programs that bridge the gap between technological awareness and pedagogical application.

The concept of AI literacy has emerged as a crucial framework for understanding and developing teachers' competencies in AI integration. Current research emphasizes that AI literacy extends beyond technical skills to include critical thinking about AI systems, understanding of AI capabilities and limitations, and the ability to evaluate AI outputs critically (Roe et al., 2025). This broader conceptualization aligns with the UNESCO AI Competency Framework, which positions AI literacy as a multidimensional competency requiring integration of knowledge, skills, and values (Miao & Cukurova, 2024).

Theoretical Foundations: TPACK and AI Integration

The Technological Pedagogical Content Knowledge (TPACK) framework has served as a foundational model for understanding teachers' knowledge integration in technology-enhanced learning environments. Recent research has extended this framework to address AI integration, with several studies proposing AI-enhanced versions of TPACK that specifically address the unique characteristics of AI technologies (Chiu, 2025; Tan et al., 2025). The intelligent-TPACK (I-TPACK) framework integrates AI literacy components—technical understanding, ethical awareness, and competency application—into the traditional TPACK structure.

Research has demonstrated that TPACK plays a mediating role in the relationship between AI competency and teaching performance in higher education contexts (Tan et al., 2025). This finding suggests that developing teachers' AI competency through the lens of integrated pedagogical and content knowledge may be more effective than focusing solely on technical skills. The mediating role of TPACK indicates that AI integration competence alone is insufficient for improved teaching performance; rather, this competence must be integrated with pedagogical understanding and content knowledge.

Design-Based Research in AI Education

Design-based research (DBR) has emerged as a particularly valuable methodology for developing and evaluating innovative educational interventions, including those involving AI integration. DBR's iterative, context-sensitive approach aligns well with the complex, multifaceted nature of AI integration in education (Wang, 2020). The methodology allows researchers to develop interventions that are both theoretically grounded and practically viable, while simultaneously generating insights that inform broader educational practice.

Recent studies have successfully applied DBR methodologies to AI-enhanced learning interventions, demonstrating the approach's effectiveness for developing innovative educational practices (Liu et al., 2025). The integration of DBR with AI education research has yielded insights into effective strategies for designing AI-enhanced curricula and identifying critical factors that influence successful implementation.

Critical AI Literacy and Ethical Integration

The development of critical AI literacy has become increasingly important as AI systems become more prevalent in educational contexts. Critical AI literacy involves not only understanding how AI works but also developing the capacity to critically evaluate AI outputs, recognize bias and limitations, and make informed decisions about AI use (Roe et al., 2025). This critical perspective is essential for ensuring that AI integration serves educational goals rather than merely adopting new technologies.

Research by Gander & Parsons (2024) emphasized the importance of evaluating AI tools critically, particularly in educational contexts where the quality and accuracy of AI-generated content can significantly impact learning outcomes. The study highlighted the need for structured approaches to developing students' critical AI literacy skills, including systematic evaluation of AI outputs and understanding of AI limitations.

Ethical considerations in AI integration have received growing attention in teacher education research. Studies have emphasized the importance of developing preservice teachers' understanding of ethical AI integration principles, including issues related to bias, privacy, academic integrity, and the appropriate use of AI-generated content (Daher, 2025; Zou et al., 2025). These ethical considerations are particularly important in teacher education, as future teachers will need to model appropriate AI use and guide students in developing their own

AI literacy.

Creative Instructional Design and AI

The intersection of artificial intelligence and creative instructional design represents an emerging area of research with significant implications for teacher education. Recent studies have explored how AI tools can support creative instructional design processes, including brainstorming, differentiation, and personalization (Almatrafi & Johri 2025). These capabilities offer opportunities to enhance teaching effectiveness while simultaneously developing preservice teachers' creative and innovative thinking skills.

Research indicates that AI tools can serve as valuable assistants in the instructional design process, providing suggestions, generating alternatives, and supporting creative ideation (Moundridou et al., 2024). However, this integration requires careful consideration of how AI supports rather than replaces human creativity and pedagogical judgment. The challenge lies in leveraging AI's capabilities while maintaining the essential human elements of educational practice.

Theoretical Framework

This study draws upon several complementary theoretical frameworks to guide the development and evaluation of the AI-integrated curriculum module. The primary framework is the extended Technology Pedagogical Content Knowledge (TPACK) model, adapted specifically for AI integration contexts. This framework posits that effective AI integration requires the integration of technological knowledge, pedagogical knowledge, and content knowledge, with additional emphasis on AI-specific competencies including critical AI literacy and ethical reasoning.

The TPACK framework for AI integration extends beyond traditional technology integration by incorporating three additional dimensions: AI technical knowledge, AI pedagogical knowledge, and AI ethical knowledge (Miao & Cukurova, 2024). This extended framework recognizes that AI technologies present unique challenges and opportunities that require specialized understanding beyond general technological competence.

Complementing the TPACK framework is the construct of critical AI literacy, which emphasizes the development of critical thinking skills related to AI systems. This construct includes the ability to evaluate AI outputs critically, understand AI limitations and biases, and make informed decisions about AI use in educational contexts (Roe et al., 2025). Critical AI literacy is particularly important in teacher education, where future teachers must not only use AI effectively but also guide students in developing their own AI literacy.

The study also incorporates insights from Self-Determination Theory (SDT) to understand preservice teachers' motivations for AI adoption. SDT posits that intrinsic motivation develops when the basic psychological needs of autonomy, competence, and relatedness are supported, which in turn strengthens individuals' engagement

with learning and technology use (Ryan & Deci, 2000). Applying this framework to technology integration, research shows that teachers' persistence in adopting new digital tools is shaped by the extent to which learning environments support these needs, offering a useful lens for designing AI integration experiences that enhance preservice teachers' competence and autonomy (Chiu, 2022).

Method

Research Design

This study employed a design-based research (DBR) methodology to develop, implement, and evaluate the AI-integrated curriculum module. DBR was chosen for its suitability in addressing complex educational problems requiring innovative solutions that are both theoretically grounded and practically viable (Wang, 2020). The DBR approach allowed for iterative refinement of the curriculum based on participant feedback and emerging insights throughout the implementation process.

The research followed a mixed-methods convergent parallel design, combining quantitative data collection to measure changes in AI integration competencies with qualitative methods to explore participants' experiences, attitudes, and perceptions. This approach provided comprehensive insights into both the effectiveness of the intervention and the mechanisms through which change occurred.

Participants

The study involved 86 third-year preservice teachers from various academic departments at Eskişehir Osmangazi University. Participants were enrolled in the Teaching Principles and Methods course during the 2024–2025 academic year. The sample included students from multiple subject areas, including mathematics (n=24), science (n=18), social studies (n=16), language arts (n=15), and other subjects (n=13). The gender distribution was 68 females (79%) and 18 males (21%), with ages ranging from 20 to 24 years (M = 21.8, SD = 1.2).

Participant selection was based on convenience sampling, with all students enrolled in the designated course invited to participate. Participation in the research study was voluntary, and all participants provided informed consent. The study received approval from the university ethics committee prior to implementation.

Curriculum Module Description

The AI-integrated curriculum module was designed as a six-week intensive component within the broader Teaching Principles and Methods course. The module was structured around three core learning objectives: (1) developing AI integration competency, (2) fostering creative instructional design skills, and (3) building critical AI literacy and ethical awareness.

Week 1: Foundations of AI in Education
- Introduction to generative AI tools and their educational applications
- Overview of AI capabilities, limitations, and ethical considerations
- Exploration of the UNESCO AI Competency Framework for Teachers

Week 2: AI-Assisted Lesson Planning
- Hands-on experience with AI tools for lesson plan development
- Integration of AI outputs with pedagogical principles
- Emphasis on maintaining learner-centered design approaches

Week 3: Critical Evaluation of AI Outputs
- Systematic evaluation of AI-generated educational content
- Identification of biases, inaccuracies, and limitations in AI outputs
- Development of critical evaluation rubrics and criteria

Week 4: Creative Instructional Design with AI
- AI-supported brainstorming and idea generation
- Differentiation strategies using AI tools
- Personalization and adaptive learning approaches

Week 5: Ethical AI Integration
- Principles of ethical AI use in educational settings
- Academic integrity and AI-generated content
- Privacy, bias, and fairness considerations

Week 6: Synthesis and Implementation
- Integration of all learned concepts into comprehensive lesson plans
- Peer review and feedback processes
- Reflection on learning and future applications

Data Collection Instruments

AI Integration Competency Scale (AICS)

The AI Integration Competency Scale was developed specifically for this study, drawing from existing TPACK frameworks and adapting them for AI contexts. The scale consists of 24 items organized into three subscales: Technological AI Knowledge (8 items), Pedagogical AI Knowledge (8 items), and Critical AI Literacy (8 items). Items are rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The scale demonstrated good internal consistency (Cronbach's $\alpha = .89$) and was validated through expert review and pilot testing.

Lesson Plan Rubrics

Lesson plans developed throughout the module were evaluated using a comprehensive rubric assessing: (a) integration of AI tools with pedagogical objectives, (b) alignment with learner-centered principles, (c) evidence of creative instructional design, (d) demonstration of critical AI literacy, and (e) ethical considerations in AI use. Each criterion was scored on a 4-point scale (1 = beginning, 2 = developing, 3 = proficient, 4 = exemplary).

Reflective Journals

Participants maintained weekly reflective journals documenting their experiences, challenges, insights, and learning throughout the module. Journal prompts encouraged reflection on AI tool experiences, pedagogical implications, ethical considerations, and personal growth in AI integration confidence.

Focus Group Interviews

Semi-structured focus group interviews were conducted with 24 participants (6 groups of 4 participants each) following module completion. Interview questions explored participants' experiences with AI tools, perceived changes in confidence and competence, challenges encountered, and recommendations for future implementation.

Data Analysis

Quantitative Analysis

Paired samples t-tests were conducted to examine pre-post changes in AI Integration Competency Scale scores. Effect sizes were calculated using Cohen's d to determine practical significance of changes. Subscale analyses were performed to identify specific areas of improvement. Statistical analyses were conducted using SPSS version 28, with significance set at $p < .05$.

Qualitative Analysis

Thematic analysis was used to analyze reflective journal entries and focus group interview transcripts. Data were coded using an inductive approach, with initial codes derived from the data and subsequently organized into broader themes. Inter-rater reliability was established through independent coding by two researchers ($\kappa = .83$). NVivo 14 software was used to support the coding and analysis process.

Integration of Data Sources

Findings from quantitative and qualitative analyses were integrated through a convergent mixed-methods approach. Quantitative results were used to identify overall patterns and effects, while qualitative data provided

explanations and deeper insights into the mechanisms of change. Triangulation across data sources enhanced the validity and comprehensiveness of findings.

Results

Quantitative Findings

AI Integration Competency Scale Results

Analysis of pre-post AI Integration Competency Scale scores revealed significant improvements across all measured dimensions. The overall AI integration competency score increased significantly from pre-intervention ($M = 3.82$, $SD = 0.67$) to post-intervention ($M = 5.14$, $SD = 0.58$), $t(85) = 5.84$, $p < .001$, with a large effect size ($d = 2.15$). This improvement represented a 34.6% increase in competency ratings.

Table 1. Pre–Post Differences in AI Integration Competency Scores

Scale/Subscale	Pre-test M (SD)	Post-test M (SD)	t(85)	p-value	Effect Size (d)
Overall AI Integration Competency	3.82 (0.67)	5.14 (0.58)	5.84	< .001	2.15
Technological AI Knowledge	3.94 (0.71)	5.31 (0.62)	4.92	< .001	2.05
Pedagogical AI Knowledge	3.76 (0.73)	5.28 (0.64)	5.21	< .001	2.19
Critical AI Literacy	3.76 (0.68)	4.83 (0.59)	3.98	< .001	1.72

Subscale Analysis

Examination of subscales revealed varying degrees of improvement:

- Technological AI Knowledge: Significant increase from $M = 3.94$ ($SD = 0.71$) to $M = 5.31$ ($SD = 0.62$), $t(85) = 4.92$, $p < .001$, $d = 2.05$
- Pedagogical AI Knowledge: Significant increase from $M = 3.76$ ($SD = 0.73$) to $M = 5.28$ ($SD = 0.64$), $t(85) = 5.21$, $p < .001$, $d = 2.19$
- Critical AI Literacy: Significant increase from $M = 3.76$ ($SD = 0.68$) to $M = 4.83$ ($SD = 0.59$), $t(85) = 3.98$, $p < .001$, $d = 1.72$

Lesson Plan Quality Assessment

Analysis of lesson plan rubric scores demonstrated significant improvements across all evaluation criteria. The mean overall lesson plan score increased from 2.1 ($SD = 0.4$) to 3.2 ($SD = 0.5$), $t(85) = 6.73$, $p < .001$, with medium to large effect sizes across individual criteria. Bar chart displaying four categories (Overall, Technological, Pedagogical, Critical AI Literacy) with grouped bars for pre- and post-test means, illustrating substantial increases in all areas is shown in Figure 1.

Table 2. Lesson Plan Rubric Score Improvements

Rubric Criterion	Pre-test Mean	Post-test Mean	Mean Difference
AI–Pedagogy Alignment	2.0	3.3	+1.3
Learner-Centered Design	2.2	3.1	+0.9
Instructional Creativity	2.1	3.4	+1.3
Critical AI Literacy Demonstration	2.0	3.0	+1.0
Ethical Considerations	2.1	3.2	+1.1
Overall Rubric Score	2.1	3.2	+1.1

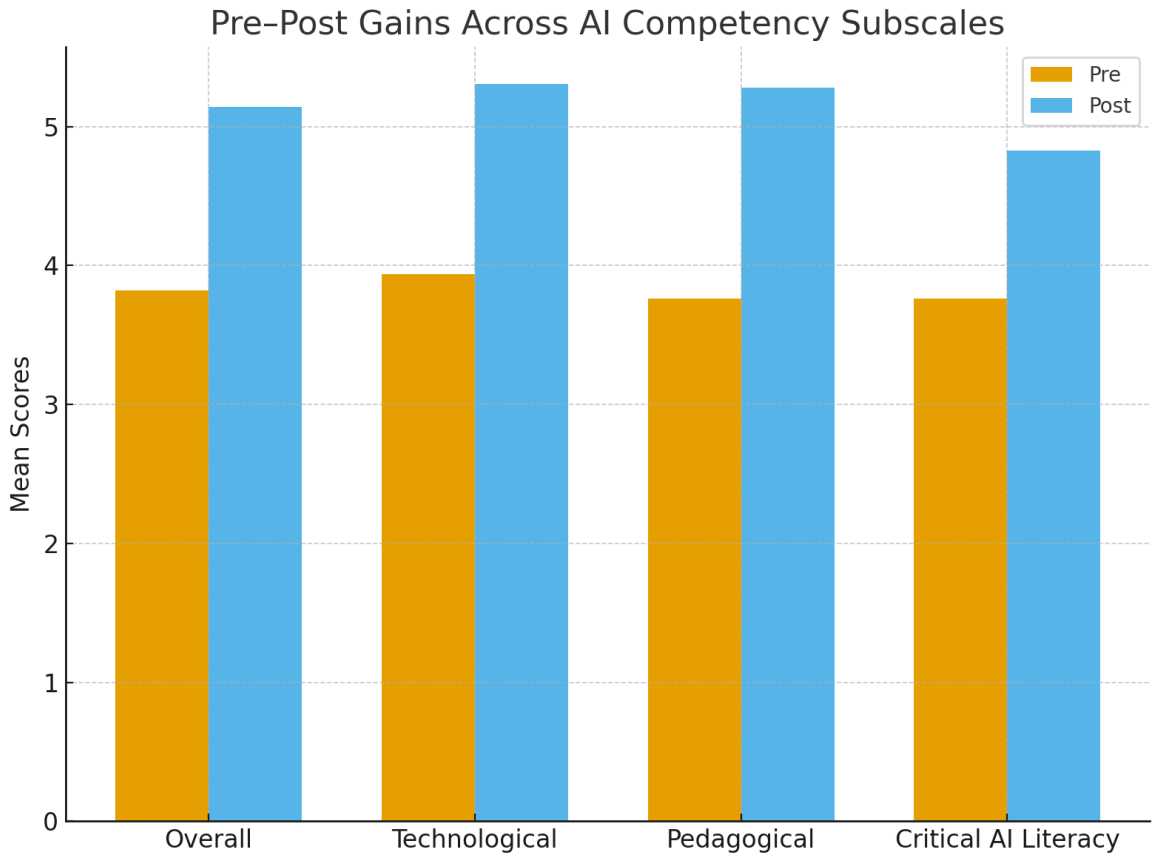

Figure 1. Pre–Post Gains Across AI Competency Subscale

Qualitative Findings

Thematic analysis of reflective journals and focus group interviews revealed three overarching themes that captured participants' experiences and learning throughout the module.

Theme 1: Emerging Pedagogical Confidence

Participants consistently reported increased confidence in their ability to integrate AI tools into their teaching

practices. Many described initial skepticism or anxiety about AI technologies that transformed into enthusiasm and perceived competence. One participant noted, "Initially, I was worried that AI would replace my creativity as a teacher. Now I realize it can actually enhance my ability to design engaging lessons that I might not have thought of independently."

The development of pedagogical confidence appeared to be closely tied to hands-on experiences with AI tools and guided reflection on their educational applications. Participants who engaged more actively with the practical components of the module reported greater confidence gains.

Theme 2: Critical Awareness of AI Limitations and Bias

A second prominent theme involved the development of critical perspectives regarding AI technologies. Participants described learning to evaluate AI outputs systematically and recognizing the limitations and potential biases inherent in AI systems. One participant observed, "I learned that I can't just trust what AI generates - I need to fact-check and evaluate whether the information is appropriate for my students."

This critical awareness seemed to develop gradually throughout the module, with participants moving from uncritical acceptance of AI outputs to sophisticated evaluation practices. The critical evaluation exercises were frequently mentioned as particularly valuable learning experiences.

Theme 3: Enhanced Instructional Creativity

The third major theme involved reports of enhanced creativity in instructional design. Participants described AI tools as supporting their creative thinking processes, particularly during brainstorming and differentiation phases of lesson planning. Many noted that AI suggestions helped them think of approaches they might not have considered independently.

However, participants also emphasized the importance of maintaining human creativity and judgment in instructional design. As one participant stated, "AI can give me ideas, but I still need to use my knowledge of my students and my subject area to create truly effective lessons."

Participants' Perceptions of AI Tools

Analysis of focus group interviews revealed nuanced perceptions of AI tools' role in educational practice. Participants identified several key benefits and challenges associated with AI integration:

Identified Benefits:
- Enhanced brainstorming and idea generation capabilities
- Support for differentiation and personalization strategies

- Assistance with time-consuming tasks such as generating examples or practice problems
- Opportunities for reflective practice through AI interaction

Identified Challenges:
- Need for explicit ethical guidance and clear boundaries
- Difficulty in evaluating the quality and accuracy of AI outputs
- Concerns about over-reliance on AI tools
- Uncertainty about appropriate use of AI-generated content in educational settings

Support for Learning and Reflection:
Participants consistently reported that AI tools supported their learning process through immediate feedback, alternative perspectives, and opportunities for exploration. Many described using AI tools as "thinking partners" that helped them develop and refine their ideas.

Factors Influencing Effective Integration

Analysis of participant experiences revealed several factors that facilitated or hindered effective AI integration:

Facilitating Factors:
- Structured guidance and systematic evaluation criteria
- Opportunities for hands-on practice and experimentation
- Clear connections between AI use and pedagogical principles
- Peer collaboration and sharing of experiences

Hindering Factors:
- Limited technical skills or familiarity with AI tools
- Concerns about academic integrity and appropriate use
- Insufficient time for reflection and integration
- Lack of ongoing support and mentorship

Discussion

Theoretical Contributions

The findings of this study make several important contributions to the theoretical understanding of AI integration in teacher education. The significant improvements in AI integration competency across all measured dimensions provide empirical support for the extended TPACK framework in AI contexts. The particularly strong gains in pedagogical AI knowledge ($d = 2.19$) suggest that focusing on the intersection of AI technology and pedagogical practice may be more effective than emphasizing technical skills alone.

The mediating role of TPACK in AI competency development aligns with previous research demonstrating TPACK's importance in technology integration (Tan et al., 2025). However, the current study extends this understanding by demonstrating how systematic pedagogical focus can enhance AI integration outcomes specifically. This finding has important implications for the design of AI integration programs in teacher education.

The development of critical AI literacy emerged as a significant outcome, with participants demonstrating increased ability to evaluate AI outputs critically and recognize AI limitations. This finding supports recent theoretical work emphasizing the importance of critical perspectives in AI education (Roe et al., 2025) and provides empirical evidence for the effectiveness of systematic approaches to developing critical AI literacy.

Practical Implications

The study's findings have several important implications for teacher education practice. The significant improvements in AI integration competencies suggest that structured, pedagogy-centered approaches to AI integration can effectively prepare preservice teachers for AI-enhanced educational environments. The success of the six-week intensive module format provides a promising model for AI integration in teacher education programs.

The identification of critical AI awareness as a key outcome suggests that teacher education programs should explicitly address ethical and critical considerations in AI integration. The participants' emphasis on the need for explicit ethical guidance indicates that these topics should be integrated systematically rather than addressed peripherally.

The enhancement of instructional creativity reported by participants suggests that AI tools can serve as valuable supports for creative teaching when integrated thoughtfully. This finding challenges narratives that position AI as potentially diminishing human creativity and instead suggests that AI can enhance creative capabilities when used appropriately.

Curriculum Design Insights

The study provides several insights for designing effective AI integration curricula in teacher education. The importance of hands-on experience with AI tools emerged consistently, with participants who engaged more actively with practical components reporting greater benefits. This suggests that experiential learning approaches should be central to AI integration programs.

The need for systematic evaluation criteria and rubrics became evident through participants' reports of increased confidence in evaluating AI outputs. This finding suggests that teacher education programs should provide explicit frameworks for AI evaluation that students can apply consistently.

The value of peer collaboration and sharing experiences highlighted the importance of social learning in AI integration. Future programs should incorporate structured opportunities for peer interaction, collaboration, and reflection.

Limitations and Future Research

This study has several limitations that should be acknowledged. The single-institution design limits generalizability to other contexts and populations. The relatively short intervention period (six weeks) may not capture the long-term impacts of AI integration training. Additionally, the self-report nature of much of the data may be subject to social desirability bias.

Future research should examine the long-term impacts of AI integration training on teaching practice and student learning outcomes. Studies with larger, more diverse samples across multiple institutions would enhance generalizability. Research investigating the specific features of AI integration curricula that contribute most to positive outcomes would inform program design.

Implications for Policy and Practice

The findings suggest several policy implications for teacher education programs. The demonstrated effectiveness of structured AI integration training supports investment in comprehensive AI literacy development for preservice teachers. Educational institutions should consider integrating AI competency requirements into teacher preparation programs and providing resources for faculty development in this area.

The importance of ethical guidance suggests that policy frameworks for AI use in education should be developed in consultation with teacher educators and integrated into professional preparation programs. The findings also highlight the need for ongoing support and professional development for both preservice and practicing teachers as AI technologies continue to evolve.

Conclusion

This study demonstrates that structured, pedagogy-centered AI integration can effectively prepare preservice teachers for AI-enhanced educational environments. The significant improvements in AI integration competency, critical AI literacy, and instructional creativity provide evidence for the effectiveness of systematic approaches to AI integration in teacher education.

The development of critical AI awareness emerged as a particularly important outcome, with participants demonstrating increased ability to evaluate AI outputs critically and recognize the limitations and potential biases of AI systems. This critical perspective is essential for ensuring that AI integration serves educational goals rather than merely adopting new technologies.

The study's findings suggest several key principles for effective AI integration in teacher education: (1) emphasize the intersection of AI technology and pedagogical practice rather than focusing solely on technical skills; (2) provide structured opportunities for hands-on experience and systematic evaluation; (3) address ethical considerations explicitly and systematically; and (4) support collaborative learning and reflection processes.

The six-week intensive module format proved effective, providing a feasible model for integrating AI competencies into existing teacher education programs. The mixed-methods approach revealed rich insights into participants' experiences and learning processes, highlighting the value of combining quantitative outcome measures with qualitative exploration of participant experiences.

As AI technologies continue to evolve and become more prevalent in educational settings, the need for comprehensive teacher preparation will only increase. The framework and insights provided by this study offer a foundation for developing effective approaches to AI integration that prepare teachers not only to use AI tools effectively but also to think critically about their implications and use them to enhance rather than replace human creativity and pedagogical judgment.

Future research should continue to investigate the long-term impacts of AI integration training on teaching practice and student learning outcomes, examine the effectiveness of different curricular approaches, and explore the specific features of AI integration programs that contribute most to positive outcomes. The field would also benefit from research investigating the integration of AI literacy development across the broader teacher education curriculum, rather than as a separate, intensive module.

The transformative potential of AI in education cannot be realized without adequately prepared teachers who understand both the opportunities and challenges presented by these technologies. This study contributes to the growing body of knowledge on effective approaches to AI integration in teacher education and provides a foundation for continued innovation in this rapidly evolving field.

Recommendations

Based on these findings, we recommend that teacher education programs implement structured, pedagogy-centered AI integration approaches through six-to-eight-week intensive modules that prioritize hands-on practice and critical evaluation over technical training. Institutional leaders should establish clear AI guidelines, allocate resources for faculty development, and create supportive environments for experimental AI use in teaching. Policymakers need to develop AI integration standards for teacher certification and quality assurance mechanisms for AI-enhanced programs. Future research should focus on large-scale longitudinal studies examining long-term impacts, comparative analyses of curricular models, and development of validated assessment instruments. Technology developers must prioritize pedagogical alignment in AI tool design while fostering academic-industry partnerships for educational tool testing. Success requires coordinated efforts across

educators, institutions, policymakers, and technology developers, guided by principles of pedagogical alignment, critical evaluation, and enhancement of human creativity in educational practice.

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Unravelling Dysgraphia: A Pilot Study on Diagnostic Pathways

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Abstract: Dysgraphia is a specific learning disorder affecting more than just handwriting style, clarity or pace involving a broad spectrum of abilities such as visuospatial, graphomotor and language functions. Although it is commonly observed in educational environments, thorough research and evaluation of dysgraphia are still scarce and there is presently no reliable standardized diagnostic instrument tailored for the Greek population. The objective of this study was to recognize, define and classify the traits of dysgraphia to create practical definitions that would support the design of a novel digital screening instrument. The approach involved conducting a review of existing literature and gathering distinctive features related to dysgraphia. These features were then assessed by 50 undergraduate and postgraduate education and special education students, who analyzed written language samples to measure inter-rater reliability. Qualitative analyses revealed mechanical transcription difficulties, such as problems with letter formation, readability and spelling along, with visuospatial and graphomotor challenges connected to page layout and structure. Functional definitions were created for each category to improve the objectivity of the evaluation criteria. Altogether 14 categories of traits were recognized. Preliminary results indicate that the organized classification of dysgraphia-related features may aid in creating a valid diagnostic screening instrument. In conclusion, this pilot study highlights the need for further research on the implementation of a culturally and linguistically adapted screening tool for the Greek population, thereby contributing significantly to the diagnosis and educational support of individuals with dysgraphia.

Keywords: dysgraphia, handwriting, specific learning difficulties, characteristics

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Introduction

Standardized screening assessments serve as instruments in psychology and education to evaluate individual abilities. These assessments aim to deliver consistent results enabling performance comparisons among peers of

the same age group. By means of this analysis and comparison diagnosing Specific Learning Disabilities becomes feasible (Meteyard & Gilmore 2015). Among others, such as dyslexia or dyscalculia, dysgraphia is classified as one of the Specific Learning Disabilities.

Dysgraphia greatly impacts students capacity to communicate in writing with precision and clarity. It primarily involves the components of writing including neatness, readability and speed of writing (Berninger & Wolf, 2009). Timely detection of these challenges is essential, for students' academic progress and emotional well-being (Cahill, 2009). Consequently having valid and reliable screening and assessment instruments is vital as they facilitate the prompt detection of issues and the initiation of focused educational support. These tools function not only as diagnostic tools, but also as a foundation for the design of individualized support programs that promote the equal participation of students in the learning process (Graham et al., 2017).

Dysgraphia: Characteristics, Epidemiology and Different Aspects

The occurrence of Specific Learning Disabilities (SLD) such as dysgraphia is believed to vary between 10% and 30% among the population (Karlsdottir & Stefansson, 2002). In particular dysgraphia is identified by challenges, in handwriting skills leading to illegible writing, inaccurate spelling, disordered written output and exhaustion when engaged in writing activities (American Psychiatric Association, 2013). These learners might additionally exhibit issues with the arrangement of letters (such as iregular letter size, difficulties with alignment and steadiness, spacing among letters, etc.) alongside struggles, with punctuation, writing fluency and orthographic concistency. These challenges are not a result of effort or drive, but instead stem from neurodevelopmental causes (Berninger & Worl 2009). Furthermore, they often result to reduced self-esteem and heightened anxiety in writing-related academic tasks, which can negatively affect students' school adjustment (Kaplan et al., 2006).

Despite the well-documented impact of dysgraphia on children's academic functioning, there is still no consensus regarding its precise definition. There is currently no consensus in the literature on writing disorders on the definition of dysgraphia (for a review see Albaret, Kaiser & Soppelsa, 2013). Researchers have proposed various conceptualizations of the disorder, highlighting different aspects of the writing process. More specifically, several definitions have been put forward over the years. According to Ajuriaguerra, Auzias & Denner (1971), dysgraphia is associated with a significant deterioration in the quality of writing, which is not explained by a neurological or cognitive disorder. Alston (1985) defined dysgraphia as a writing dysfunction characterized by a lack of sufficient fluency and ability to quickly take notes and other actions related to the act of writing itself. Dysgraphia is also defined by Rubin & Henderson (1982) as a deficit in writing function, which is evident in the spatial components of writing independently of its morphosyntactic components. Also, according to Hamstra-Bletz & Blöte (1993), dysgraphia is a written language disorder that affects the mechanical factors of writing and occurs in children with normal intelligence, without neurological disorder or perceptual motor disability. Finally, according to the definition of Caramazza, Capasso & Miceli (1996) and the DSM-V (APA, 2013), dysgraphia is characterized by deficient processing in the conversion of auditory and

visual stimuli into motor behavior, by the individual's difficulty in producing legible handwriting and a general inconsistency of reading level and writing. In conclusion, these contradictory perspectives emphasize that dysgraphia remains a construct, whose margins can only be clarified by motor, cognitive and linguistic dimensions.

Dysgraphia, although not related to the child's intellectual potential, significantly affects school performance and is often associated with neurological dysfunctions (Padeliadu, 2000). It is a difficulty in the mental representation and sequencing of muscle movements required for writing letters, numbers and symbols (Hamstra-Bletz & Blote, 1993). It manifests as weak, slow and illegible writing and appears from the early stages of writing, often in coexistence with other learning difficulties (Friedmann & Lukov, 2008; Friedmann & Rahamim, 2007). It can be the result of either an acquired deficit or a developmental disorder.

Typology of Developmental Dysgraphia

Acquired dysgraphia involves partial or total loss of previously acquired writing skills, usually due to brain trauma, tumor or disease. According to Stasinos (2001), it is distinguished into phonological, superficial and deep dysgraphia:

Table 1. Types of Acquired Dysgraphia

Type	Functional Definition
Phonological dysgraphia	Difficulty in writing pseudowords, unknown or non-phonologically smooth words, with preservation of the ability to copy.
Surface (spelling/lexical) dysgraphia	Writing that follows correctly the phonological rules, but difficulty in writing mistakes in words that do not obey them (e.g. άβλη instead of αυλή).
Deep dysgraphia	Characterized by semantic, morphological and visual errors, with better performance in concrete than in abstract words and difficulties in producing pseudowords.

Developmental dysgraphia appears in the early school years and involves a significant delay in the development of written expression skills, which is not explained by intellectual level, educational environment or medical factors. According to Deuel (1995) and Paquette & Tuttle (2003), it is distinguished into dyslexic (phonological), motor and visuospatial dysgraphia (see Table 2).

On the other hand, Deuel (1995) distinguishes dysgraphia into specific dysgraphia, neurodevelopmental with unknown etiology, and non-specific dysgraphia, which is due to known causes such as intellectual disability,

emotional problems or inadequate education. Dysgraphia can also result from brain damage or neuromuscular dysfunctions, such as awkward pencil grip and finger agnosia, while it is often confused with handwriting due to insufficient practice (Chung & Patel, 2015). Specific dysgraphia is associated with problems with handwriting, spelling, and cognitive processes, such as memory and executive functions, and includes three subtypes: dysgraphia with deficits in letter production, dyslexia with deficits in spelling and reading, and oral and written language learning disability with syntactic difficulties (Berninger et al., 2015).

Table 2. Types of Developmental Dysgraphia

Type	Functional Definition
Dyslexic (phonological) dysgraphia	Characterized by illegible written speech and poor spelling, while copying is relatively good. The difficulties mainly concern phonological processing and often coexist with reading difficulties, due to deficits in the connection of phonemes-graphemes.
Motor dysgraphia	Due to poor motor skills and problems with graphomotor coordination, affecting the quality of writing both in free expression and in copying. Spelling is usually good, but letter drawing is difficult and time-consuming.
Visuospatial dysgraphia	Concerns difficulties in the spatial organization of writing. Freehand writing, copying, and letter drawing are problematic, with errors in spacing, orientation, omissions, and spatial arrangement on the page. Despite satisfactory spelling and fine motor skills, difficulties in the perception of space and time lead to illegible written language.

Olivaux (2005) links dysgraphia to a deficit in one of the functions of writing — instrumental, communicative or expressive — and distinguishes two types: organic and reactive dysgraphia. Organic dysgraphia is due to disorders of cognitive, pragmatic and linguistic functions, written expression and arithmetic. The difficulties are pragmatic or cognitive in nature and are associated with problems of psychomotor functions, lateralization, eye-hand coordination, visuospatial and spatiotemporal organization. Reactive dysgraphia is characterized by the child's resistance to writing, which may reflect a defense or compensation for difficulties. It is not explained only by psychomotor problems, but may be a reaction to the demands of school or an expression of emotional difficulties, interpreted as academic and social denial.

This complexity in the assessment of dysgraphia arises partly from the multifactorial nature of the disorder and the challenges associated with distinguishing it from other related conditions, such as developmental coordination disorder (DCD) and attention-deficit/ hyperactivity disorder (ADHD) (Biotteau et al., 2019).

Today, the scientific community adopts multiple approaches to understanding and assessing this disorder, which include neuropsychological, sensorimotor, linguistic and educational perspectives. For example, executive functioning, visuomotor integration, fine motor skills, and language processing are often examined using modern neuroimaging methods and multidimensional assessment tools (Purcell et al., 2017). However, there is still no unified classification or agreement on diagnostic criteria. As a result, while this diversity of perspectives contributes to a richer understanding of dysgraphia, it also complicates the development of a commonly accepted diagnostic framework.

Existing Assessment Tools

Although dysgraphia is common and greatly affects students' education and growth, there is currently no recognized definition or set of diagnostic standards for it. Consequently, different countries employ diagnostic and assessment tools. For instance, in the United Kingdom, the Detailed Assessment of Speed of Handwriting (DASH) is utilized to evaluate handwriting speed and quality in children aged 9-16 (Barnett et al., 2007). Likewise, the BHK (Beknopte Beoordelingsmethode voor Kinderhandschriften; Concise Evaluation Scale, for Childrens Handwriting) is commonly employed across countries to evaluate handwriting quality and pace among primary school children (Charles et al., 2004). The Handwriting Proficiency Screening Questionnaire for Children (HPSQ-C) is primarily used by teachers to identify handwriting difficulties in classroom settings (Rosenblum, 2008), while the Evaluation Tool of Children's Handwriting (ETCH) is commonly applied in the United States by occupational therapists to provide a more in-depth evaluation of handwriting performance (Amundson, 1995). The diversity of these approaches and tools indicates the need for international harmonization of dysgraphia assessment criteria, based on scientific evidence.

Assessing dysgraphia is a complex and multifaceted method, as it encompasses not only the visual elements of written material, but also the dynamic factors of the writing procedure, including pressure, speed, acceleration, rhythm and so forth (Biotteau et al., 2019). Conventional evaluation instruments typically focus on characteristics like spelling, clarity or the duration needed to finish a writing task. However, contemporary research emphasizes the need for systematic monitoring of graphomotor characteristics to obtain a more comprehensive understanding of underlying deficits. Recent technological advancements, particularly in digital assessment tools, have enabled the precise recording and analysis of parameters such as pen pressure, movement trajectories, and writing speed, factors that were previously difficult to measure accurately (Asselborn et al., 2018).

Numerous tools created so far are still, in the research or experimental phase and therefore lack reliable and clinically validated assessment techniques. For instance the EU DysgraphiaCheck project (2021) offers research evidence supporting the identification of dysgraphia. Likewise Van Waelvelde et al. (2012) introduced the Systematic Observation of Skills (SOS) as an instrument intended to methodically document handwriting skill benchmarks, primarily for research aims. Dimauro et al. (2020) introduced TestGraphia, a software tool that conducts examination of handwritten script by utilizing motor activity metrics, aiming to detect dysgraphia

patterns. Other accessible solutions, including Google Cloud Vision API and Microsoft Azure OCR provide character recognition functions; nevertheless they do not offer interpretive or assessment features (Google Cloud, 2023; Microsoft Azure, 2023). Finally, the Handwriting Analysis Toolkit (HAT) focuses on the extraction of handwriting features for research applications (Zhou et al., 2019).

Need for Innovative Digital Detection Tools

Lately the development of automated and innovative methods supporting experts in diagnosis and offering screening tools for screening of dysgraphia has gained significant importance. Researchers like Asselborn et al. (2018) have suggested approaches, including algorithmic strategies for evaluating dysgraphia and machine learning-based techniques. Furthermore, more current instruments concentrate on data digitization and analysis lacking standardized, validated and educationally practical assessments for the identification of dysgraphia (Biotteau et al., 2019; Dimauro et al., 2020). Notably, there are no standardized handwritting screening instruments in Greece, assessing dysgraphia, nor a digital one supported by artificial intelligence. This gap underlines the necessity to build and validate a tool that combines digital technology, artificial intelligence and educational frameworks. The aim of such a tool would be to document the handwriting features of texts, and to automatically recognize dysgraphic traits. To develop a reliable instrument, for detecting handwriting difficulties it is essential initially to methodically monitor, gather and accurately characterize the characteristics and symptoms that reveal a child's dysgraphia. This process ensures that the tool will be able to consistently identify children who present difficulties in written expression, differentiating them from children with temporary or non-specific difficulties, while at the same time providing reliable information for the direction of intervention and educational support.

Purpose and Significance of the Study

The aim of the present study was to identify and categorize the core characteristics of dysgraphia in order to formulate functional definitions that could serve as the foundation for the development of a new digital screening tool. The literature on dysgraphia as a developmental learning disorder is limited in contrast to developmental dyslexia for which there is a wealth of scientific studies. On the other hand, the various classifications and definitions in the international literature make it difficult to form a clear picture of the scope, characteristics and etiology of this learning disorder (Dohla & Heim, 2015). Despite extensive research, there is still no standardized or universally accepted framework for diagnosing dysgraphia, particularly within the Greek educational system. This lack has created difficulties for teachers and special education specialists in their efforts to identify difficulties in graph-symbolic abilities and to implement appropriate intervention practices. Therefore, the development of a digitally validated tool for detecting these difficulties will be able to contribute significantly both at a practical and research level. It is well established that evaluating the characteristics of dysgraphia is a demanding task, requiring considerable time and effort from educators and experts in the field. Moreover, the qualitative evaluation of a handwritten text cannot be determined by strictly predefined criteria. Within this context, the need for objective assessment, the systematic identification of the traits of dysgraphia

stands out as the initial and crucial phase, for creating a digital instrument assessing dysgraphia. The current review was directed by the inquiry: What are the characteristics that could identify dysgraphia?

Method

Research Design

This research constitutes a literature review focused on recognizing, arranging and categorizing the features related to dysgraphia as documented in international and Greek literature sources. Concurrently the research incorporates an evaluation procedure carried out by a team of specialists aiming to improve the accuracy and dependability of these features as indicators, for identifying writing challenges. Specifically, a mixed-method, exploratory design was adopted to identify and categorize the defining characteristics of dysgraphia, with the goal of developing functional diagnostic definitions applicable to the Greek context. The PRISMA flow chart shows briefly the procedure followed for the literature review and search results (see Figure 1).

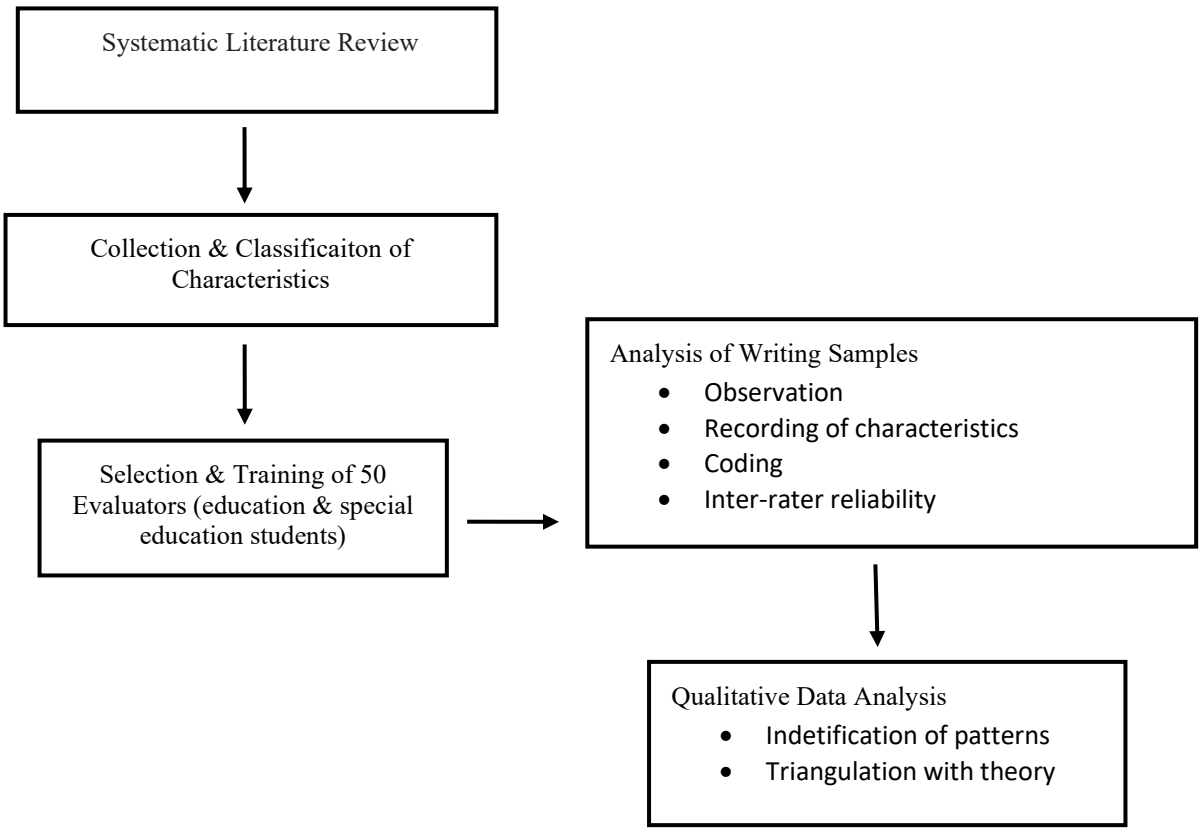

Figure 1. PRISMA Flow Chart

Procedure

The study began with a comprehensive literature review to compile characteristic features associated with dysgraphia, encompassing mechanical, visuospatial, graphomotor, and linguistic domains. The systematic

review of scientific articles, books, research reports and diagnostic frameworks concerning dysgraphia, graphomotor development and learning disabilities was carried out. Particular emphasis was given to: (a) the definition of dysgraphia, (b) the diagnostic classification of its types, (c) the behavioral and graphomotor characteristics identified in students' written output, and (d) the approaches to assessing written language. Based on the bibliography, an analytical list of characteristics that appear as possible indicators of dysgraphia was compiled. Criteria for selection and classification were: (a) their frequency of appearance in the bibliography, (b) their relevance to documented forms of dysgraphia, and (c) their possibility of observation in the written product. These features were operationalized into a preliminary checklist. Participants analyzed a series of anonymized written language samples and used the checklist to evaluate the presence of dysgraphic traits.

Sample of Participants

Fifty (N = 50) undergraduate and postgraduate students in Education and Special Education participated voluntarily. All participants had prior training in learning difficulties and basic experience in evaluating written language samples. More specifically, their selection was based on: (a) relevant academic background, (b) theoretical familiarity with specific learning disabilities, and (c) ability to analyze written language. The evaluators were tasked with examining a series of written samples and identifying the presence or absence of the listed characteristics. The process included: Systematic observation of the written text, recording and coding of the characteristics based on the reference list.

Data Analysis

Inter-rater reliability was examined through consistency across participant evaluations. The aim was to investigate whether the characteristics identified in the literature are practically recognizable and stable when analyzing students' written product. Qualitative analysis of participants' observations was conducted to identify recurring patterns and refine the functional definitions. The qualitative analysis contributed to the formation of a clearer picture of the characteristics that can constitute reliable indicators of dysgraphia. Fourteen categories of dysgraphic features were ultimately established, each accompanied by descriptive criteria designed to support future diagnostic screening tool development.

Results and Discussion

The analysis of the literature, combined with the qualitative processing of the written samples, led to the identification of a coherent set of characteristics associated with developmental dysgraphia. These characteristics were grouped into three main areas: graphomotor, visuospatial and linguistic. In the graphomotor area, difficulties such as unstable letter formation were consistently recorded. Visuospatial difficulties concerned problems with letter placement, alignment, size stability and overall organization of the page. In the linguistic area, spelling errors, phoneme-grapheme mismatches, letter omissions or substitutions and low quality of written speech were observed. A total of 14 subcategories were noted. Furthermore, the inter-rater reliability

test showed a high degree of agreement, reinforcing the validity of the characteristics that were finally established. Figure 2 depicts a sample of written text and Table 3 describes the characteristics that can constitute reliable indicators of dysgraphia.

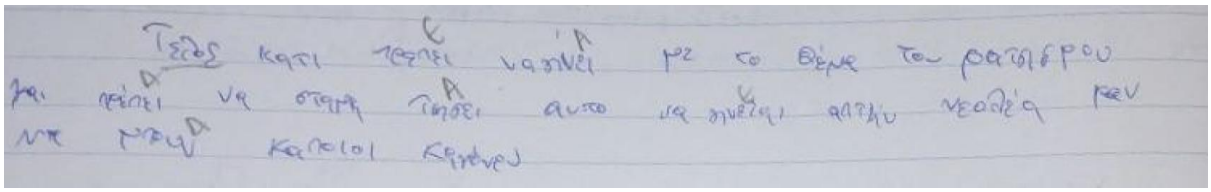

Figure 2. Text Sample

Table 3. The Characteristics & Operational Definitions of Dysgraphia

Characteristic	**Operational Definition (Summary)**
Text Slant	The text leans inward or outward relative to paragraph alignment.
Page Margins	Writing intrudes into left or right margins.
Legibility	Illegible if the text cannot be read or makes no sense.
Word Alignment	Words align horizontally or slope upward/downward.
Spacing Between Words	Number of visible gaps between consecutive words.
Spacing Between Lines	Irregular or missing gaps between lines.
Letter Size (Width-Height)	Letters do not stay within consistent height proportions (about 60% of capital height).
Letter Slant	Letters lean more than 45° left or right.
Line Stability	Trembling or wavy lines indicating instability.
Letter Formation	Weak completeness, connectivity, and recognizability of lines.
Letter Reversal	Reversed letters (e.g., μ/ν, λ/3, ε).
Incomplete Letter	Letters not fully formed or missing parts.
Connected Letters	Letters connected or fused together.
Unrecognizable Letter	Letters or shapes not resembling any correct letter form.

The findings of this pilot study confirm the multifaceted and multidimensional nature of dysgraphia, which manifests itself through a set of linguistic, visuospatial and graphomotor characteristics, as it has also been highlighted in previous international studies (Berninger & Wolf, 2009; Rosenblum et al., 2003). The systematic grouping of characteristics that emerged in the literature was confirmed by the qualitative analysis of handwritten samples. This confirmation also demonstrated that dysgraphia is not a single phenomenon, but a complex of difficulties that interact at multiple levels. The development of functional, explicit and measurable definitions for each category enhances diagnostic consistency and is in line with international efforts to establish clear evidence-based criteria (Berninger et al., 2015).

In the Greek educational context, where standardized tools for the early detection and assessment of dysgraphia remain limited, the results of this study are of particular importance. They offer an initial, but essential basis for the future development of reliable methods and mainly digital tools, which are capable of identifying writing difficulties with greater accuracy (Anagnostou et al., 2021). This contribution is crucial, as early recognition of the characteristics of dysgraphia allows for the implementation of targeted interventions, reduces school dropout and supports the academic inclusion of students who struggle.

The results of the current study highlight the need to understand dysgraphia as a phenomenon that is directly linked to broader mechanisms of learning and executive function. The observed variety in graphomotor patterns and language errors confirms that children with dysgraphia often show difficulties in working memory, in the automation of motor sequences and in the coordinated recall of visual-linguistic information (Graham & Weintraub, 1996; Mayes et al., 2018). Furthermore, the convergence of the findings of the present literature review with the classifications of Deuel (1995) and Hamstra-Bletz & Blöte (1993) reinforces the view that dysgraphia is not a single clinical entity, but a family of distinct subtypes with different profiles of difficulties. This has important practical implications: assessment should be multifactorial and include observation of graphomotor behavior, analysis of language errors, as well as investigation of visuospatial functions. Such approaches have proven to be particularly effective in international assessment systems (Feder & Majnemer, 2007), which suggests that their adoption in the Greek reality can significantly enhance the validity of diagnostic procedures

Conclusion

The initial findings suggest that the systematic categorization of dysgraphia-related characteristics can support the development of a reliable and valid diagnostic screening tool. This pilot study highlights the need for further empirical validation and pilot implementation of a test adapted to the Greek population, thereby contributing to improved diagnosis and educational support for individuals with dysgraphia.

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The Most Common Causes of Academic Burnout of Working Students

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Abstract: The demands of both study and work make students exhausted in carrying out their activities. The purpose of this study is to describe the aspects that most affect academic burnout of students in the city of Jakarta, Indonesia. This research method is a survey with a sample of 451 people. The instrument used School burnout inventory (SBI) and analyzed with RASCH modeling and MS. Excel. Person reliability is 0.70 and item reliability is 1.00. The results of academic burnout of working students are 17% of students in the low category, the rest are in the medium category 59%, and high 24%. Emotional exhaustion and depersonalization are the most common causes of academic burnout in working students. Thus the need for counseling in reducing academic burnout of working students in the city of Jakarta, Indonesia.

Keywords: Academic burnout, Rasch Model, Students, Covid-19 pandemic, Workers

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Introduction

Academic burnout is a condition of physical and emotional exhaustion experienced by students, one of which is caused by prolonged stress conditions (Maslach & Schaufeli, et al., 2001, Oktasari et al., 2022.). Universities have begun to pay attention to this condition, including those faced by students. Academic burnout is also studied

by various countries in the world, such as in China there are 86.6% of students experiencing severe academic stress to cause academic burnout, while in Iran, medical students who experience academic burnout are 76.8% and severe stress is 71.7% (Rad, et al., 2017). In addition, students in America (87%) feel that education is a significant source of stress (American Psychological Association, 2020). Meanwhile, in Indonesia, such as in the Special Region of Yogyakarta, it is known that the Academic burnout of Universitas Gajah Mada (UGM) students in 2021 is 59.36% (LM Psychology UGM, 2021). In addition, in West Java, as many as 11,131,500 students have experienced lecture stress, and a quarter of the students have been diagnosed with psychiatric disorders (Tiaranissa, & Rosiana, 2022). Strengthening the data in the condition of academic burnout, Indonesia became the second-ranked country in the academic burnout study for the last 12 months, namely February 2022-February 2023 (https://trends.google.co.id). In this study, academic burnout conditions were revealed in students in Jakarta, Indonesia. Students who have activities in metropolitan cities have more pressure due to the demands and interactions of busier activities in their daily lives (Hairunnisa, & Pungkasane, 2021). This study can provide an overview of the extent of academic burnout of students who work in the city of Jakarta and the aspects that influence it the most.

Academic burnout has three aspects: 1) emotional exhaustion, caused by excessive emotional and psychological demands and usually coexisting with feelings of frustration and tension, 2) aversion to study or cynicism, refers to insensitivity or a cynical attitude towards the work at hand. Cynicism can also be defined as student apathy or indifference. 3) Reduced desire to achieve, reduced desire to achieve occurs when a person displays a tendency to evaluate themselves negatively, a decreased feeling of work competence, and increased feelings of inefficacy towards school work, tasks, and responsibilities. (Yang et al., 2017; Yang, 2004;Paloş, 2024; Khadijah, et. al., 2023).

Aspects that affect the occurrence of academic burnout need to be known as a prevention of worse conditions, in several countries the aspects that affect the occurrence of academic burnout have been discussed further. In Serbia, Romania, Korea, fatigue is more influential and dominates, followed by cynicism (Nikodijević, et al., 2012; Cazan & Nastasa, 2015; Lee, et al, 2010). In Taiwan "self- identity stress", "interpersonal stress", "future development stress", and "academic stress" can jointly predict students' academic burnout (Lin, & Huang, 2014). In China, life satisfaction is one of the most influential in academic burnout of students in higher education.

The results of research from Rosales (2021) from 20 literature review studies evaluated in a systematic review obtained information that emotional exhaustion is most influential in academic burnout in North America, Latin America, and in Europe. Based on some of the results of these studies, describing the conditions of academic burnout of students in universities in various countries in the world but not with the conditions of students who study and work simultaneously, thus in this article the author reveals more details related to academic burnout in working students in the capital city of Indonesia. This research is also a preliminary study to determine the interventions and treatments that need to be prepared to overcome the academic burnout of working students.

Method

This research method is a survey with respondents of employee class students at one of the Private Universities in Jakarta, Indonesia. The sample was 451 students who work. The sampling technique is incidental sampling. The instrument used is the School burnout inventory (SBI) academic burnout scale with a Likert scale model, with good instrument reliability results, while the academic burnout items are valid. Instrument distribution is done through g-form. The data analysis used is RASCH modeling analysis (Rangka et al., 2017; Sumintono & Widhiarso, 2014), and obtaining categorization results through Ms. Excel.

Results and Discussion

Based on the results of data processing, data information is obtained related to the level of academic burnout of working students, and analysis of student answer patterns in academic burnout conditions and seeing the condition of equalization of answers to the items analyzed. Regarding the level of academic burnout of working students, the information is obtained in Figure 1.

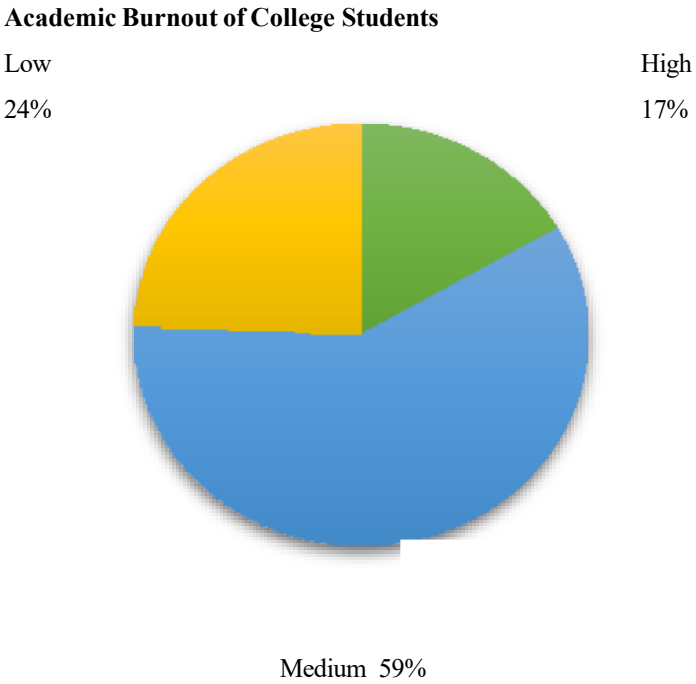

Figure 1. Academic Burnout of College Students

The data explains that the level of academic burnout of students in the moderate category is 59%, but what is of concern based on the data above is the low percentage of student academic burnout, thus it can be interpreted that students in general experience more burnout related to learning, especially for students who work. This is supported by the results of person reliability obtained as shown in Table 1.

Table 1. Person Reliability of Academic Burnout

Summary of 451 Measured Person								
	Total Score	**Count**	**Measure**	**Model Error**	**Infit**		**Outfit**	
					MNSQ	**ZTSD**	**MNSQ**	**ZTSD**
Mean	37.7	15.0	.11	.47	.99	-.1	1.01	-.1
S.D.	4.2	.0	.93	.01	.47	1.3	.48	1.3
Max.	49.0	15.0	2.66	.52	2.45	3.2	2.55	3.0
Min.	24.0	15.0	-3.05	.46	.25	-3.0	.27	-2.8

Real RMSE	.51	True Sd	.77	Separation	1.51	Person Reliability	.70
Model RMSE	.47	True Sd	.08	Separation	1.70	Person Reliability	.74

Person Raw Score-To-Measure Correlation = 1.00

Cronbach Alpha (Kr-20) Person Raw Score "Test" Reliability = .73

Based on the information in Table 1, it can be seen that person reliability is in the good category with a reliability coefficient of 0.70 and item reliability is in the high category of 1.00. This shows the suitability of items with respondents, namely working students, it can be seen that students are serious in filling out statement items in the good category, so that the reliability of the person is not much different from the overall test reliability coefficient value.

Table 2. Item Reliability of Academic Burnout

Summary of 15 Measured Item								
	Total Score	**Count**	**Measure**	**Model Error**	**Infit**		**Outfit**	
					MNSQ	**ZTSD**	**MNSQ**	**ZTSD**
Mean	1134.6	451.0	.00.09		.99	-.3	1.01	-.1
S.D.	255.8	.0	1.80.00		.20	3.3	.23	3.6
Max.	1616.0	451.0	2.83.10		1.23	3.5	1.37	4.7
Min.	746.0	451.0	-3.43.08		.60	-7.3	.60	-7.3

Real RMSE	.09	True Sd	1.80	Separation	20.16	Person Reliability	1.00
Model RMSE	.09	True Sd	1.80	Separation	20. 99	Person Reliability	1.00

Umean=.0000 Uscale=1.0000

Item Raw Score-To-Measure Correlation = -1.00

6765 Data Points. Log-Likelihood Chi-Square: 10922.07 With 6298 D.F. P=.0000

Global Root-Mean-Square Residual (Excluding Extreme Scores): .5459

For the validity of the item as a whole is valid, it can be concluded that the item and person have a match in filling. This suitability is also supported based on the results of the following item maps. The findings from the item reliability of the academic burnout are given in Table 2

Table 3. Item Dimensionality of Academic Burnout

Table of Standardized Residual variance (in Eigenvalue units)					
			-- Empirical --		Modeled
Total raw variance in observations	=	35.4	100.0%		100.0%
Raw variance explained by measures	=	20.4	57.6%		56.9%
Raw variance explained by persons	=	3.8	10.8%		10.6%
Raw Variance explained by items	=	16.6	46.9%		46.3%
Raw unexplained variance (total)	=	15.0	42.4%	100.0%	43.1%
Unexplained variance in 1st contrast	=	2.6	7.4%	17.4%	
Unexplained variance in 2nd contrast	=	1.8	5.0%	11.8%	
Unexplained variance in 3rd contrast	=	1.4	4.1%	9.6%	
Unexplained variance in 4th contrast	=	1.3	3.5%	8.3%	
Unexplained variance in 5th contrast	=	1.1	3.1%	7.3%	

Based on Figure 2, it can be seen that the average distribution of items can be answered by respondents well, items no. 5, 3 and 9 are the easiest to agree with. Statement number 5 is "Feeling worried about missing lecture material when unable to attend lectures", number 3 is "Completing assignments even though there are many tasks to be completed" from number 9 is "Trying to do coursework to the maximum". The statement is in the indicator of emotional exhaustion and depersonalization.

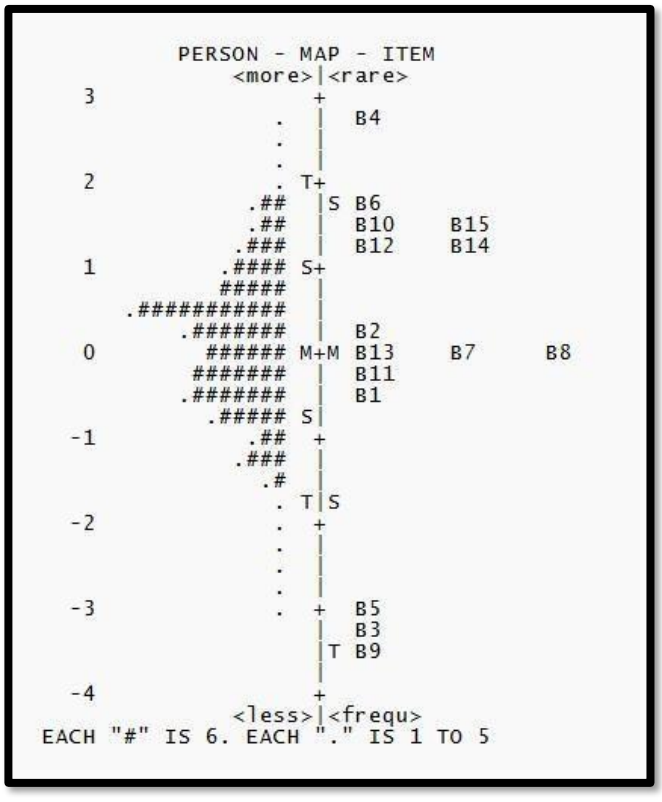

Figure 2. Item Maps of Academic Burnout

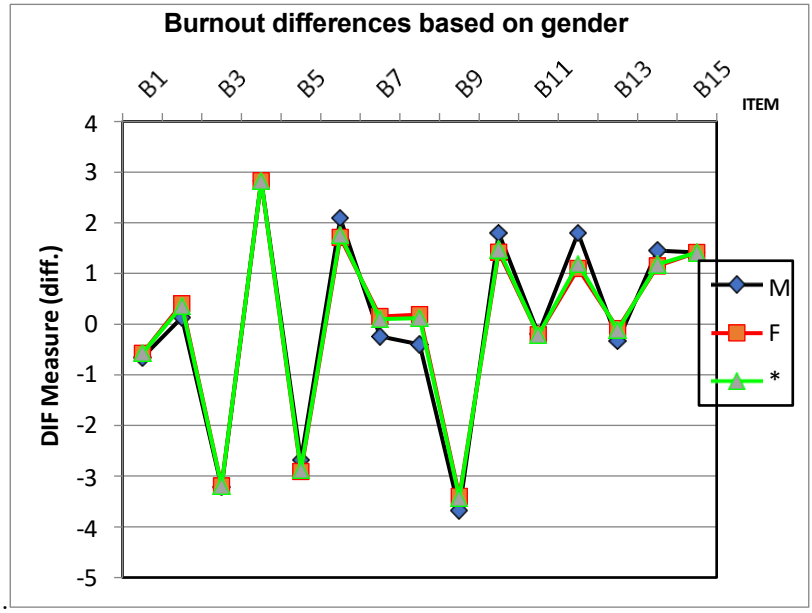

Figure 3. Burnout Condition based on Gender

Figure 3 explains the burnout condition based on gender, in the figure it can be understood that the female graph line is closer to the item than the male, this can be interpreted that women feel more burnout than men. In addition, based on the semester level, it can be seen that the seventh semester experiences more burnout conditions, this can be seen in Figure 4.

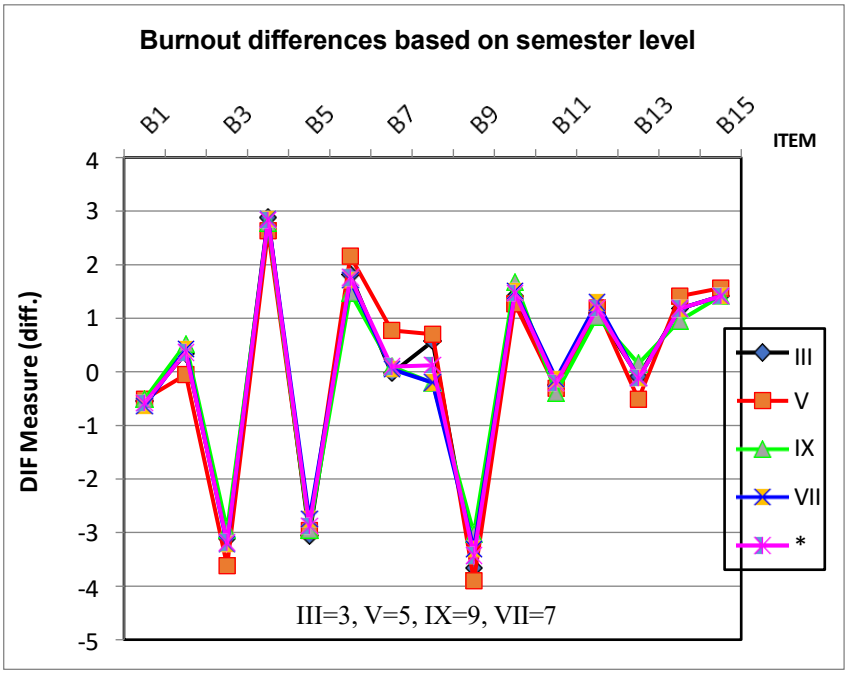

Figure 4. Burnout Condition based on Semester

In semester 7, the burnout condition is felt because the assignments during semester seven tend to be more varied,

this means that in semester seven the students carry out field practice which requires them to do internships in predetermined schools, on the other hand the students also still have courses that must be followed on campus to deepen their material and understanding, and because of their condition there are also those who work, to make a living, for that the various responsibilities and demands that must be carried out in one certain time, namely during semester seven, make the students experience burnout.

In the graphical representation of gender and semester level, it can be seen that item number 4 is closest to each respondent, where the item states "When the assignments given are many, I ignore the assignments given by the lecturer". It can be seen that one of the closest conditions that makes student burnout is the task given too much. Burnout is understood as a state of physical, emotional and mental exhaustion caused by long- term involvement in emotionally demanding situations (Pines & Aronson, 1998; Maslach & Leiter, 2016). Emotional exhaustion is the beginning of the emergence of burnout then depersonalization, and finally shows a decrease in achievement / achievement (Maslach, 1993; Maslach & Leiter, 2016). Emotional exhaustion is fatigue in individuals related to personal feelings characterized by a sense of helplessness and depression, emotional exhaustion is always preceded by a common symptom, namely the onset of anxiety every time you want to start working, which then leads to a feeling of helplessness in facing the demands of work (Bianchi et al., 2018).

In line with this, the results obtained by students feel worried and the thought of having to complete assignments makes students feel emotional fatigue, this condition can also be accompanied by the demands of studying and working which make it difficult for students to manage or allocate time between the two, this condition can also make students easily neglect their responsibilities to study and complete assignments given by lecturers (Le et al., 2018).

On the other hand, the condition of students who have to work full-time or part-time to fulfill their financial needs is also undeniable. This is further driven by the fact that many parents no longer support or bear the full financial costs of college education and scholarships are limited and very competitive (Lenaghan & Sengupta, 2007; Barrow et al., 2014; Broton et al., 2016; Herbaut & Geven, 2020). For this reason, pressure at work or workload is also a factor in the emergence of burnout (Pace et al., 2021). Burnout in college students can be the key to understanding their various behaviors as well as the quality of learning, student burnout can also affect their present and future relationships with colleges, friends, lecturers and others. (Neumann et al., 1990; Lin & Huang, 2014). Thus, handling academic burnout can be focused on overcoming the emotional exhaustion faced by working students through various approaches in guidance and counseling, one of which is cognitive behavior art therapy (CBAT) (Gad, et al: 2023; Catanzano et al, 2023; Welsh et al, 2025) or Solution Focus Brief Counseling (Khadijah, et al., 2023).

Conclusions

Through the results of data analysis of academic burnout with RASCH modeling and Ms. Excel, it is obtained that academic burnout of students who work is quite an important concern, this is because the results of academic

burnout in the medium and high categories are seen. Based on item maps, the emotional exhaustion indicator is the most common condition felt by students. Of course, this is necessary for guidance and counseling to further provide the right treatment in reducing the academic burnout of working students, one of which is through cognitive behavior art therapy or Solution Focus Brief Counseling.

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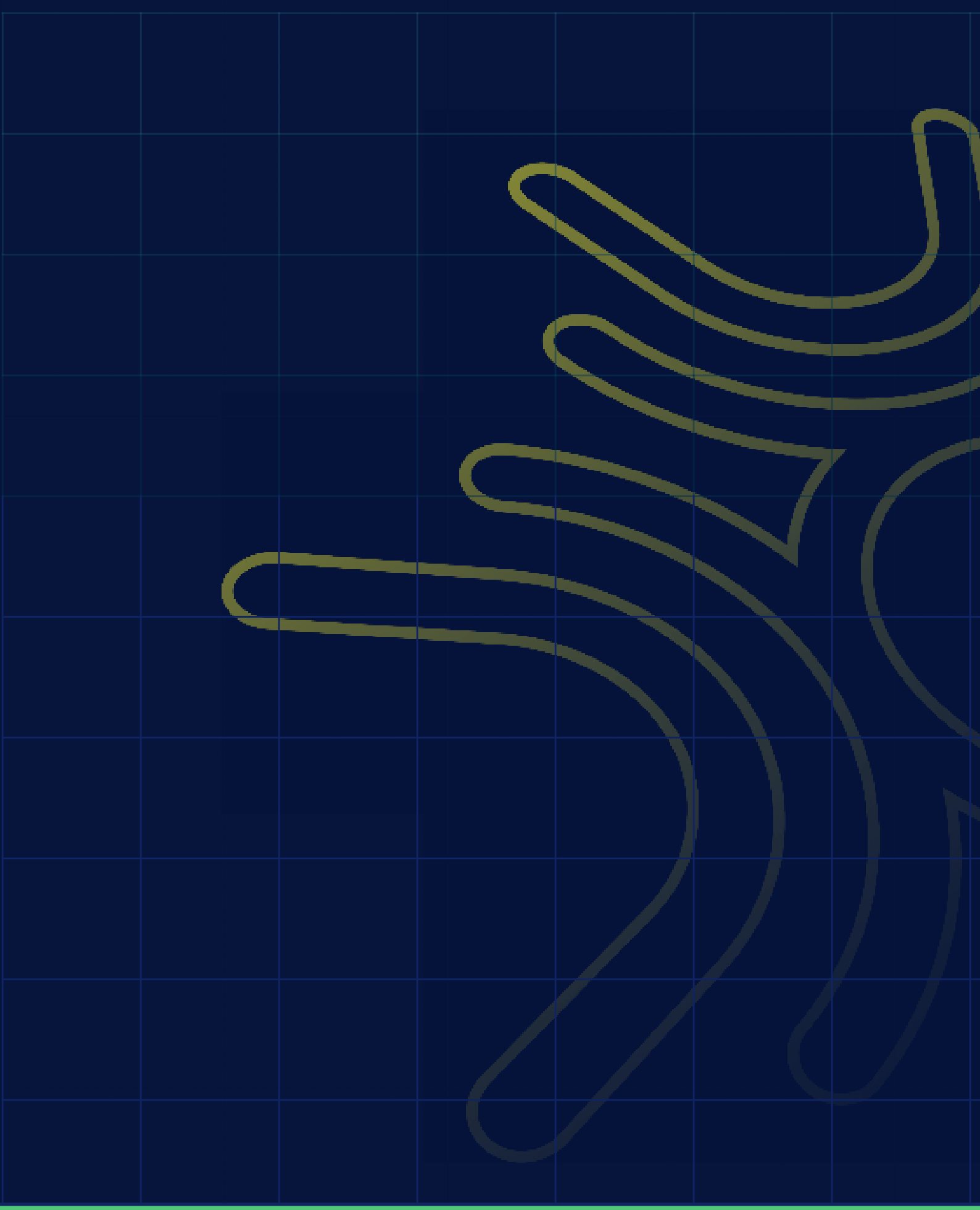

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