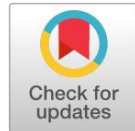


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## Implementation of Digital Literacy Based Hybrid Classes in Islamic Education (PAI) Study Programs in Higher Education

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### ABSTRACT

**Background:** The rapid development of digital technology has encouraged universities to integrate technology into the learning process, including in Islamic education. The implementation of hybrid classes has become an innovative learning solution that combines online and offline learning to enhance the digital literacy of students and lecturers. However, the implementation of hybrid learning in the Islamic Education Study Program still requires the development of an effective model aligned with Islamic educational values.

**Purpose:** This study aims to develop a hybrid class-based Islamic education model to improve the digital literacy skills of the academic community in the Islamic Education Study Program, Faculty of Islamic Studies, Muhammadiyah University of South Tapanuli.

**Method:** This study employed a qualitative approach using the Plomp Model, which consists of the stages of Planning, Learning, Organizing, Operating, Monitoring, and Product. Data were collected through observation, interviews, and documentation, and then analyzed through data reduction, data presentation, and conclusion drawing.

**Results:** The findings revealed that the implementation of hybrid classes significantly improved students' digital literacy skills, lecturers' competencies in utilizing learning technology, and the overall quality of digital-based learning within the faculty. Hybrid learning also encouraged active student participation through the use of Learning Management Systems (LMS), virtual discussions, and collaborative digital projects.

**Conclusion:** The hybrid class-based Islamic education development model proved effective in enhancing digital literacy and supporting learning transformation that is relevant to technological advancements while maintaining Islamic educational values.

### KEYWORDS

Digital Literacy, Hybrid Learning, Islamic Education

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### INTRODUCTION

The development of digital technology has brought significant changes to various aspects of life, including education. The world of education is currently facing the challenge of integrating digital technology into the learning process in order to remain relevant to contemporary needs (Rosfiani 2025). One of the innovative approaches that has begun to be implemented is the use of hybrid classrooms, which combine online and offline learning (Siregar 2023). This approach is expected to improve digital literacy among both students and lecturers, as digital literacy is considered



one of the essential skills in the digital era (Syayidah Nur Amaliyah Alfi 2023).

Universities are currently undergoing a transformation driven by the rapid development of information technology (Cut et al., 2023). In this context, hybrid classrooms are considered a strategic approach because they combine the flexibility of online learning with the advantages of face-to-face interaction. The use of appropriate learning development models is believed to create a more interactive and collaborative learning environment, thereby increasing student engagement and supporting academic success (Suwana, 2021). This is in line with the view that active student participation is one of the key indicators of learning success. In addition, the hybrid model allows for more efficient use of educational infrastructure, reduces the burden on physical classrooms, and supports distance learning with adequate technological support (Guerrero-Quiñonez et al., 2023). Furthermore, hybrid learning has been proven to improve digital literacy competencies among both students and lecturers (Nørgård, 2021). This demonstrates that skills in managing digital platforms, online communication, and virtual collaboration have become urgent necessities in the era of globalization (Nykvist dkk., 2021).

In the context of Islamic education, the Faculty of Islamic Religion (FAI) at University of Muhammadiyah South Tapanuli has begun implementing hybrid classes as a strategic solution to meet the needs of adaptive, flexible, and technologically relevant learning. However, the level of digital literacy among students and lecturers in utilizing hybrid classes still requires further investigation to ensure its effectiveness. The development of hybrid classroom-based Islamic education is not only intended to improve digital literacy but also to support the achievement of the Tridharma of Higher Education, namely education, research, and community service. (Hamid 2024). However, the implementation of hybrid learning in the context of Islamic education still requires validation, both in terms of model development and its effectiveness in improving the quality of learning. (Colina-ysea et al. 2024).

This research represents a concrete example of the implementation of hybrid classes in Islamic education. It creates opportunities to measure the impact of hybrid learning in enhancing students' knowledge, validating Islamic education models, and strengthening digital literacy skills within an international framework. Therefore, the Faculty of Islamic Religion (FAI) at University of Muhammadiyah South Tapanuli has conducted research through hybrid-based learning, despite several challenges, such as limited facilities and inadequate digital literacy training for lecturers and students. This condition highlights the need for improved facilities as well as continuous training programs to develop a more effective model of Islamic education in higher education institutions.

In line with this, previous studies have also demonstrated the relevance of implementing hybrid learning to improve digital literacy and the quality of learning (Priyambudi, Nursalim, and Masitoh 2024). Affirming that Project-Based Hybrid Learning can improve students' critical thinking skills as well as digital literacy through involvement in real projects (Fauzan and Arifin 2017). He added that web-based hybrid learning provides flexibility in learning time, allowing students to develop knowledge more independently. Meanwhile, (Lestari, Yuniawatika, and Rahmawati 2024) increasing the role of digital literacy in building students' character by requiring teachers to optimize digital literacy teaching so that students are not only consumers but also producers of critical and creative information (Okamura 2023).

From this discussion, it can be concluded that the novelty of this research lies in its focus on the development of Islamic education through hybrid learning by combining religious approaches with international collaboration. This focus distinguishes the study from previous research, which has generally been broader and less grounded in religious values. However, in terms of digital literacy

and the application of the hybrid model, this study shares similarities with previous research, particularly in adopting a progressive approach to improving the competencies of both lecturers and students in the digital era.

## RESEARCH METHODOLOGY

The research method used in this study is a qualitative method. This approach aims to deeply understand the experiences, perceptions, and dynamics of the application of the hybrid classroom model in the context of Islamic education. It allows for an exploration of the “how” and “why” of phenomena, rather than merely answering “what” happened (Samsu 2022). Qualitative research was chosen because it enables an in-depth exploration of the phenomena occurring in the field, especially those related to the application of a hybrid classroom-based Islamic education development model in improving digital literacy skills in higher education (Pangestu, Shohib, and Jinan 2025). This research focuses on understanding the meanings, processes, and experiences faced by lecturers and students in the implementation of hybrid classes (Choiriyah 2023). Data were collected through observations, in-depth interviews, and documentation to obtain a comprehensive picture of the research context. Data analysis was conducted interactively through the stages of data reduction, data presentation, and conclusion drawing, resulting in a holistic description of the ongoing implementation. By using a qualitative approach, this research is expected to provide a broader and deeper understanding of how hybrid classroom-based Islamic education development strategies can contribute to improving students’ digital literacy skills in higher education.

The learning development model used in this study is the Plomp Model (Planning, Learning, Organizing, Operating, Monitoring, and Product). According to (Rochmad 2012) the Plomp model consists of five stages: preliminary investigation, design, realization/construction, testing, evaluation, revision, and implementation.

The Plomp development model was chosen because it is considered more flexible, and each step contains development activities that can be tailored to the characteristics of the research. The main objective of the Plomp Model is to provide a systematic and structured approach to the research and development process of a product, program, or curriculum, particularly in the field of education. This model helps researchers and developers ensure that the products developed are not only effective but also relevant to the needs of their users.

The framework for development and design using the Plomp Model is illustrated in the chart below:

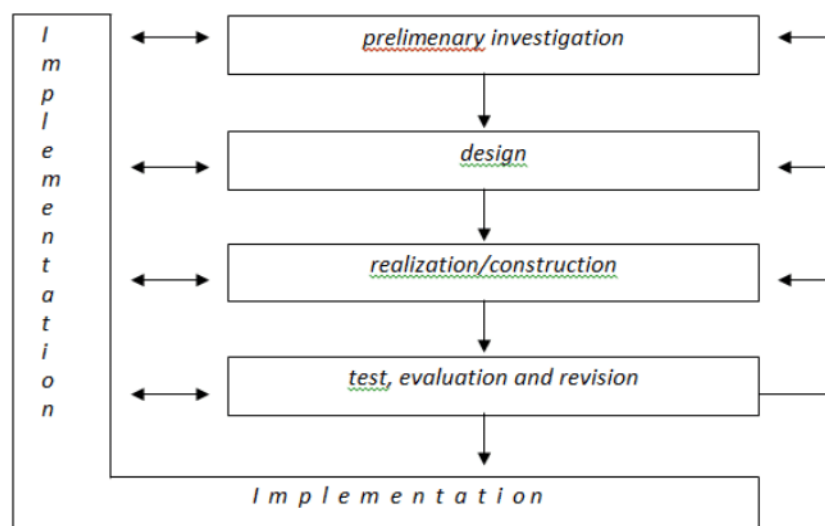


Figure 1. Plomp Development Model Design

Here is a brief explanation of each phase:

The development of learning tools takes place through several interrelated and continuous phases. The first stage is the investigation phase, where a needs analysis is conducted to identify existing problems. At this stage, the main objectives of the development, the users' needs, and the context in which the learning tools will be used are determined. The next stage is the design phase, where an initial design is created that includes content planning, structure, learning strategies, and media, all aligned with the results of the previous analysis (Hariadi et al. 2018). This is followed by the realization phase, which involves implementing the prepared designs to produce tangible products such as modules, learning media, or teaching materials. The next phase is testing, evaluation, and revision, where the developed product is tested to assess its effectiveness, efficiency, and attractiveness. Based on the test results, revisions are made to optimize the product. Finally, the implementation phase involves applying the learning tools on a broader scale, accompanied by a comprehensive evaluation to ensure that they can be used effectively and in accordance with users' needs.

## RESULT AND DISCUSSION

The results of this study show that the implementation of the hybrid classroom-based Islamic education development model using the Plomp Model runs through several interrelated stages, namely planning, learning, implementation, operation, monitoring, and products. This model is designed to integrate technology-based learning with Islamic education values in order to improve students' digital literacy skills in the PAI Study Program. The results of the study also show that the hybrid learning approach is able to create learning that is more flexible, interactive, and adaptive to technological developments. These findings are in line with the opinion of (Setiawan, Prasajo, and Mehta 2021) who state that the hybrid learning model can increase students' flexibility and engagement in the learning process.

**Table 1.** Digital Use and Needs in Islamic Education

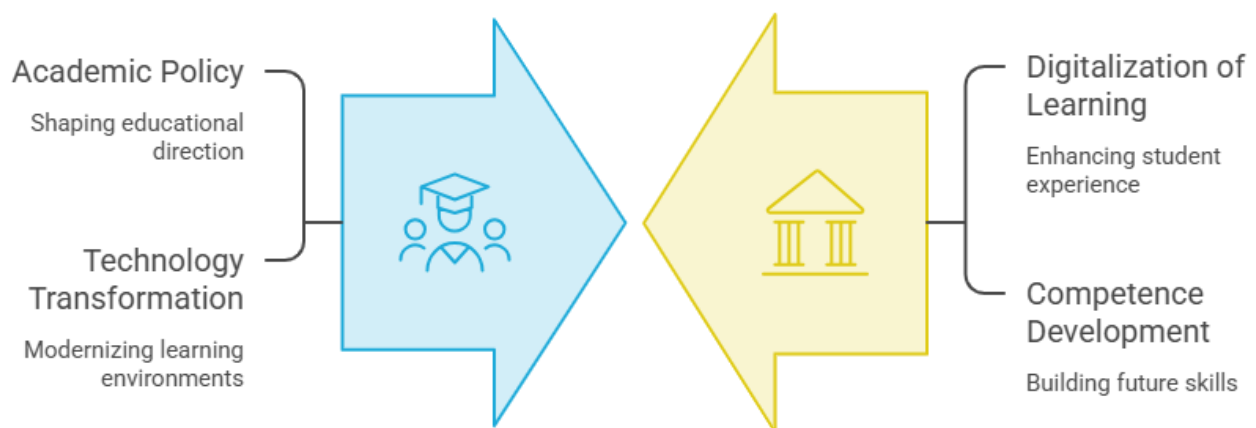
Aspect	Finding	Recommendation
Device access	Students have devices (phones/tablets/laptops)	Guide use for learning; set classroom device rules
Usage pattern	Mostly for communication/entertainment	Create digital-learning tasks and assignments
Digital literacy (Islamic content)	Not optimal for finding/evaluating Islamic resources	Provide media-literacy training and curated sources
Teaching method	Dominated by conventional face-to-face	Integrate blended or digital project-based activities
Infrastructure & teacher readiness	Varies; teacher ICT skills uneven	Offer teacher ICT training and offline material options

At the planning stage, research was conducted through needs analysis and the identification of learning problems. The results of the observations showed that students already had access to digital devices, but their use to support Islamic education learning was still relatively low. Students used digital media more for communication and entertainment than for academic activities. This condition indicates that students' digital literacy has not developed optimally, especially in accessing and utilizing digital-based Islamic resources. In addition, Islamic education learning is still dominated by conventional face-to-face methods, limiting students' opportunities to develop digital skills.

The results of interviews with lecturers and faculty leaders showed that the institution actually has policies, academic regulations, and supporting facilities for the digitization of learning that are

aligned with the university's vision and mission. The faculty has also provided hybrid and blended learning tools to support the technology-based learning process. These findings indicate that the development of hybrid learning models is important in creating a learning system that is relevant to the digital era. In this context, the Plomp development model is considered appropriate because it consists of systematic stages ranging from investigation, design, implementation, evaluation, and revision of learning products (Rochmad 2012).

At the learning stage, the researcher explored theories, concepts, and previous studies related to digital literacy, technology-based learning, and hybrid learning approaches. Digital literacy is understood as the ability of individuals to access, understand, evaluate, and produce information using digital technology (Nasrawati 2022). In the context of Islamic education, digital literacy is not only related to technical skills but also to the ability to select credible Islamic sources and utilize digital media as a means of da'wah and the development of Islamic knowledge. This is supported by Eshet-Alkalai's digital literacy theory, which emphasizes the importance of visual, informational, and social literacy in the use of digital technology, as well as the TPACK theory, which integrates technology, pedagogy, and learning content (Cicha et al., 2021).



**Figure 2.** Digital Transformation in Higher Education

The results of the interviews showed that lecturers gained new experiences in implementing hybrid learning strategies that were more interactive and innovative. Lecturers are beginning to understand the importance of using technology as part of improving professional competence in higher education. Meanwhile, the faculty considers the digitalization of learning to be an important part of academic policy development and the transformation of technology-based higher education.

The implementation phase focuses on the preparation of hybrid learning designs through the development of learning tools such as digital-based RPS, electronic modules, learning videos, and the use of the Learning Management System (LMS). Hybrid learning is designed by combining face-to-face learning and online learning through virtual discussions, digital literature searches, and multimedia-based presentations (Simbolon et al., 2019). The results of the study showed that lecturers received technical training in the use of e-learning, while students began to adapt to a more flexible blended learning pattern.

The implementation of hybrid classes in this study is in line with the concept of hybrid learning proposed by (Abdullah and Luhriyani 2018) which states that hybrid learning is a combination of several learning methods aimed at improving students' understanding. In addition, the use of technologies such as LMS, video conferencing applications, and digital media supports synchronous interaction between students who learn online and offline (Simbolon et al., 2019). This approach is also consistent with the Blended Learning Model theory proposed by Horn and Staker,

which emphasizes the integration of technology and face-to-face learning to create a more flexible and personalized learning experience.

At the operational stage, the hybrid model is applied directly in the Islamic Education learning process. Learning is carried out through a combination of offline and online activities. Face-to-face sessions are used for deepening Islamic material, studying verses and hadiths, and discussing Islamic values. Meanwhile, online learning is used for project-based assignments, digital reference searches, online discussions, and the development of simple digital da'wah media. Students are also involved in collaborative learning through the preparation of Islamic literacy-based articles and multimedia presentations.

The results of the implementation show an increase in student participation and enthusiasm in both online and offline learning. Students become more active in seeking digital information, engaging in critical discussions, and utilizing technology to support the learning process. Lecturers are also beginning to adapt better to managing hybrid-based learning. These findings reinforce the opinion of (Decline, 2025) which states that hybrid learning is able to increase student understanding through the use of digital technology that supports effective learning interactions.

At the monitoring stage, evaluation is carried out through observations, interviews, questionnaires, and analyses of student assignments. The results of the evaluation showed a significant improvement in students' digital literacy skills, especially in accessing credible Islamic sources, critically evaluating digital information, and presenting Islamic knowledge in digital form. Lecturers also experienced improvements in their skills in using e-learning, managing LMS platforms, and developing digital teaching materials. At the institutional level, the implementation of hybrid learning has had a positive impact on the quality of learning, the satisfaction of the academic community, and the image of the university as an institution that is adaptive to technological developments.

These findings show that digital literacy is an important competency in higher education in the digital era. Digital literacy is not only related to technical skills, but also to the ability to think critically in managing digital information ethically and productively (Dr. Usman et al. 2022). Thus, the model of developing Islamic education based on hybrid learning is able to create synergy between Islamic values and digital technology, so that students not only possess academic abilities but also demonstrate character and ethics in the use of technology.

Overall, this research produces a product in the form of a hybrid learning model based on Islamic education that can be used as a reference for universities in developing innovative learning that is relevant to the demands of the 21st century ( Adnyana , 2022). This model emphasizes the integration of digital technology, digital literacy, and Islamic educational values in order to create effective, adaptive, and holistically oriented learning for student competency development (Park et al., 2021)

## CONCLUSION

Based on the results of the research, it can be concluded that the implementation of the hybrid classroom-based Islamic education development model using the Plomp Model is able to improve the quality of learning and the digital literacy of students in the PAI Study Program. This model is implemented through several interrelated stages, namely planning, learning, implementation, operation, and monitoring, resulting in a learning system that is more flexible, interactive, and relevant to the development of digital technology.

The results of the study show that the implementation of hybrid learning has a positive impact on students, lecturers, and institutions. Students experience improvements in digital literacy skills,

especially in accessing, evaluating, and utilizing digital-based Islamic resources critically and responsibly. Lecturers also experience increased competence in utilizing learning technology, managing e-learning, and developing digital media and teaching materials. In addition, institutions benefit through improvements in the quality of learning, the strengthening of a technology-based academic culture, and the enhancement of the university's image as an institution that is adaptive to developments in the digital era.

Thus, the hybrid learning model based on Islamic education can be used as an innovative alternative for learning development in higher education because it is able to integrate digital technology with Islamic educational values effectively. This model also supports the creation of learning that is not only oriented toward mastery of technology, but also toward the development of students' character, ethics, and critical thinking skills in accordance with the principles of Islamic education.

## DECLARATION OF AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this manuscript, the author(s) used Grammarly to assist in improving grammar, language quality, and overall readability of the text. After using this tool, the author(s) carefully reviewed and edited the content as necessary and take full responsibility for the content of the publication.

## AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; In-vestigation.

Author 3: Data curation; Investigation.

## DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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