

# Development of ICT-Based Islamic Education Teaching Materials For Blended Learning in Higher Education

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## ABSTRACT

The integration of information and communication technology (ICT) into Islamic Education (PAI) requires teaching materials that support flexible learning while maintaining the development of students' moral values (akhlaq). This study aimed to develop and evaluate ICT-based PAI teaching materials designed for blended learning in higher education. This research employed a research and development design using the Plomp model, consisting of preliminary research, design and prototyping, and assessment phases. The developed teaching materials were evaluated by five expert validators for validity and by two PAI lecturers for practicality. A preliminary implementation involving 29 university students was conducted to descriptively examine changes in ten indicators of akhlaq before and after using the teaching materials. The teaching materials achieved an overall validity score of 90%, indicating a highly valid product. Lecturer-rated practicality ranged from 90% to 95%, with an average score of 92.4%, indicating high practicality. Descriptive assessment of students' akhlaq showed an increase in the aggregate score from 27 before implementation to 49 after implementation, out of a maximum score of 50. These findings indicate that the developed ICT-based PAI teaching materials are valid and practical for supporting blended learning and show preliminary potential to facilitate students' akhlaq development. However, because the effectiveness evidence was descriptive and did not include inferential analysis or a comparison group, the observed improvement should not be interpreted as causal evidence of effectiveness.

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## 1. INTRODUCTION

The rapid advancement of Information and Communication Technology (ICT) has profoundly transformed educational practices across the globe. In higher education, the integration of digital technologies has become a fundamental component of modern learning environments, enabling institutions to enhance accessibility, flexibility, and the overall quality of instruction.

The growing adoption of learning management systems, multimedia resources, and online collaborative platforms reflects a shift toward more interactive and student-centered learning models. Among these innovations, blended learning—an instructional approach that combines face-to-face

interaction with online learning activities—has emerged as one of the most widely adopted models for improving learning effectiveness and engagement in higher education.

Recent studies highlight that digital learning environments supported by ICT can significantly improve students' participation, motivation, and independent learning skills (Bond et al., 2020; Al-Fraihat et al., 2020). These technological advancements have encouraged universities worldwide to redesign instructional strategies that align with the characteristics of contemporary students, who are increasingly accustomed to digital interaction and technology-mediated learning experiences. Consequently, the integration of ICT is no longer viewed merely as a supplementary tool but as a strategic necessity in developing meaningful and relevant learning experiences in higher education.

Within this broader transformation, Islamic Religious Education (*Pendidikan Agama Islam*/PAI) in higher education also faces the need to adapt to technological developments. PAI plays a crucial role in shaping students' moral character, spiritual awareness, and ethical behavior. Unlike many other academic disciplines, the objectives of Islamic education extend beyond cognitive knowledge acquisition to include the internalization of moral values and the development of virtuous character. However, despite these important objectives, many PAI teaching practices in universities still rely heavily on conventional instructional materials that are predominantly text-based and teacher-centered. Such conditions often limit students' engagement and reduce opportunities for interactive learning that can facilitate deeper reflection on religious values and ethical principles (Abbas et al., 2021).

The emergence of ICT-based learning resources provides significant opportunities to enhance the effectiveness of PAI instruction. Digital teaching materials that incorporate multimedia elements, interactive modules, and online discussion platforms can create more engaging learning environments while supporting students' diverse learning preferences. Moreover, blended learning environments allow educators to integrate digital content with face-to-face discussions, enabling not only the delivery of theoretical knowledge but also the facilitation of dialogue, reflection, and moral reasoning. Recent research in digital religious education suggests that technology-supported learning environments can strengthen students' understanding of religious concepts while promoting reflective and contextualized learning experiences (Bond et al., 2020).

Nevertheless, despite the growing body of literature on ICT integration in education, research focusing specifically on the systematic development of ICT-based teaching materials for Islamic education remains relatively limited. Existing studies tend to emphasize the use of digital platforms or e-learning systems without providing comprehensive frameworks for designing instructional materials that integrate Islamic values with interactive digital components. Furthermore, few studies examine how ICT-based Islamic education materials can be effectively implemented within blended learning environments in higher education. This limitation indicates a significant research gap regarding the design and evaluation of ICT-based PAI instructional materials that simultaneously support technological innovation and character development.

This gap is particularly evident at Universitas Putra Indonesia (UPI) YPTK Padang, where blended learning has been implemented as part of institutional efforts to improve teaching quality and learning accessibility. Although the blended learning model provides opportunities for integrating digital technologies into the learning process, the teaching materials used in PAI courses remain largely conventional and have not fully incorporated ICT-based instructional design. As a result, learning activities often emphasize cognitive knowledge acquisition while the affective dimension—particularly the internalization of moral and spiritual values—has not been optimally facilitated. This condition highlights the urgent need for innovative instructional resources that integrate ICT with Islamic educational values to support meaningful and holistic learning experiences.

Based on this background, the research problem addressed in this study concerns the limited availability of ICT-based Islamic education teaching materials that effectively support blended learning while fostering students' moral and character development. The research gap lies in the lack of

systematically developed instructional materials that integrate multimedia technologies, interactive learning components, and moral value internalization within PAI courses in higher education.

Therefore, the objective of this study is to develop ICT-based Islamic Education (PAI) teaching materials for blended learning in higher education using the Plomp development model. Specifically, the study aims to evaluate the validity, practicality, and effectiveness of the developed teaching materials in improving students' engagement and supporting the internalization of Islamic moral values.

The novelty of this research lies not simply in the use of ICT or blended learning, which have been widely discussed, but in the systematic development of ICT-based PAI teaching materials that connect three functions within one instructional product: digital access and interactivity, blended face-to-face and online learning, and explicit internalization of Islamic moral values. Unlike approaches that primarily position ICT as a delivery platform, this study embeds multimedia resources, interactive activities, contextual moral reflection, and value-oriented learning tasks within the teaching materials themselves. The product is developed and refined through the Plomp model and evaluated for validity and practicality, while changes in reported akhlaq indicators are treated cautiously as descriptive evidence. Theoretically, this contributes to blended learning by showing how the model can be used not only to distribute content but also to create continuity between online learning, face-to-face dialogue, reflection, and moral reasoning. It also extends discussion of ICT-based Islamic education by positioning technology as a pedagogical mediator for value internalization rather than merely a technical support. Practically, the research provides lecturers with a structured, technology-supported, and value-oriented instructional resource for higher education PAI.

## 2. METHODS

### 2.1 Research Design

This study employed a Research and Development (R&D) design to develop and evaluate ICT-based Islamic Education (*Pendidikan Agama Islam*, PAI) teaching materials for blended learning in higher education. The development process followed the Plomp development model (Plomp, 2013), comprising three main phases: (1) preliminary research, (2) development or prototyping, and (3) assessment. The model was selected because it provides a systematic framework for developing educational products and evaluating their quality in terms of validity, practicality, and effectiveness (Nieveen, 2010).

The study focused primarily on establishing the validity and practicality of the developed teaching materials. Changes in students' akhlaq were also examined during the assessment phase; however, because the available data consisted of aggregate pretest–posttest scores without inferential statistical analysis or a comparison group, these results were treated as preliminary descriptive evidence rather than causal evidence of effectiveness.

### 2.2 Research Setting and Participants

The study was conducted in the Information Systems Study Program, Faculty of Computer Science, Universitas Putra Indonesia (UPI) YPTK Padang. The participants involved at different stages of the development process included expert validators, PAI lecturers, and undergraduate students.

Five expert validators with expertise in Islamic Education, language, content, and educational technology participated in the validation of the developed teaching materials. Two PAI lecturers participated in the needs analysis and practicality assessment. In the assessment phase, 29 undergraduate students participated in the preliminary implementation of the developed teaching materials and the descriptive assessment of changes in akhlaq indicators.

Participants were involved according to the requirements of each development phase rather than as a single homogeneous sample. Expert validators assessed product validity, lecturers evaluated its

practicality, and students participated in the implementation and descriptive before-and-after assessment.

### **2.3 Development Procedures**

The development of the ICT-based PAI teaching materials followed the three phases of the Plomp model: preliminary research, development or prototyping, and assessment.

#### **2.3.1 Preliminary Research**

The preliminary research phase was conducted to identify the learning context, problems encountered in existing PAI instruction, student characteristics, and the need for ICT-based teaching materials suitable for blended learning.

Data were obtained through interviews with PAI lecturers and students and through a review of literature related to PAI teaching materials, ICT integration, blended learning, and *akhlaq* development. The needs analysis focused on challenges associated with technological readiness, online interaction, accessibility of digital learning resources, student engagement, and the facilitation of moral learning in blended environments.

The findings from this phase were used to determine the instructional requirements and theoretical foundations for developing the initial prototype.

#### **2.3.2 Development and Prototyping Phase**

Based on the preliminary research findings, an initial prototype of the ICT-based PAI teaching materials was designed and developed. The product incorporated digital learning content, multimedia resources, interactive activities, contextual moral-reflection tasks, and learning activities intended to connect online and face-to-face instruction.

The prototype was subjected to formative evaluation through expert review and Focus Group Discussion (FGD). Five validators evaluated the teaching materials with respect to content, language, and construct or instructional-design aspects. Their comments and recommendations were used to identify weaknesses and areas requiring improvement.

The formative evaluation process resulted in revisions to the content, terminology, theoretical foundations, instructional guidelines, ICT components, and the relationship between PAI content and *akhlaq* development. Revisions were carried out iteratively until the teaching materials met the predetermined validity criteria and were considered suitable for the assessment phase.

#### **2.3.3 Assessment Phase**

The assessment phase examined the practicality of the revised teaching materials and explored descriptive changes in students' *akhlaq* following their implementation.

Practicality was assessed by two PAI lecturers based on indicators including clarity of instructions, completeness of learning materials, ease of navigation, technological support, simplicity of presentation, time allocation, balance between online and face-to-face activities, availability of supporting facilities, e-learning utilization, and integration of online and offline learning activities.

A preliminary implementation involving 29 students was also conducted to examine reported changes in ten indicators of *akhlaq* before and after the use of the teaching materials. Because individual-level pretest–posttest data, a comparison group, inferential statistical testing, and effect-size estimates were not available in the reported dataset, the before-and-after results were analyzed descriptively and were not interpreted as evidence of causal effectiveness.

### **2.4 Research Instruments**

Data were collected using instruments corresponding to the different phases and purposes of the study.

### 2.4.1 Needs-Analysis Instruments

Interviews were used during the preliminary research phase to obtain information from lecturers and students regarding existing PAI learning conditions, challenges in implementing blended learning, technological readiness, learning-resource needs, and difficulties associated with facilitating and assessing students' moral development.

### 2.4.2 Validity Instrument

An expert-validation questionnaire was used to evaluate the quality of the developed teaching materials. The validation covered three principal dimensions: content feasibility, language feasibility, and construct or instructional-design feasibility. The indicators addressed the alignment of content with learning objectives and Islamic values, clarity and consistency of language, relevance to technological development, accessibility, interactivity, visual presentation, and consistency between instructional design and learning objectives.

### 2.4.3 Practicality Instrument

A practicality questionnaire was administered to two PAI lecturers after the revised teaching materials were implemented. The instrument assessed the feasibility of using the materials in blended learning, including clarity of instructions, completeness of materials, navigation, technological support, presentation, time allocation, supporting facilities, e-learning utilization, and integration of online and face-to-face activities.

Although students participated in the assessment phase, the available dataset does not provide a separate student-practicality score. Therefore, the quantitative practicality results reported in this study refer specifically to the lecturer evaluation.

### 2.4.4 Akhlaq Assessment Instrument

A questionnaire was used to obtain before-and-after scores for ten indicators of students' akhlaq: performing prayers on time, reading the Qur'an, avoiding immoral acts, respecting parents and lecturers, honesty, trustworthiness, participation in religious activities, maintaining social ties (*silaturahmi*), practicing Islamic values in daily life, and social morality.

The available study records do not provide sufficient information regarding the number of items representing each indicator, the response-scale construction, reliability coefficients, or a separate psychometric validation procedure for this instrument. Accordingly, the resulting scores were used only for descriptive comparison and should be interpreted as preliminary evidence of observed change.

## 2.5 Data Analysis

Data were analyzed using descriptive, qualitative, and quantitative techniques according to the purpose of each development phase.

Qualitative data obtained from interviews, expert comments, and FGD feedback were reviewed and organized according to recurring issues related to learning needs, product content, language, instructional design, technological integration, and akhlaq-oriented learning. These findings were used primarily to guide the design and revision of the teaching materials.

Quantitative data from the validity and practicality questionnaires were converted into percentages using the following formula:

$$\text{Percentage} = (\text{Total Score Obtained} / \text{Maximum Possible Score}) \times 100\%$$

The validity levels were categorized as follows:

**Table 1.** Validity Percentage and Interpretation Categories

| Percentage | Category     |
|------------|--------------|
| 81–100%    | Very Valid   |
| 61–80%     | Valid        |
| 41–60%     | Fairly Valid |
| 21–40%     | Less Valid   |
| 0–20%      | Invalid      |

For practicality, percentage scores were interpreted as follows: 81–100% = very practical, 61–80% = practical, 41–60% = fairly practical, 21–40% = less practical, and 0–20% = impractical.

Changes in students' *akhlaq* were examined by descriptively comparing the aggregate scores obtained before and after implementation for each of the ten indicators. Absolute and relative changes were used to describe the observed pattern of scores. No inferential statistical test or effect-size estimate was applied because the available dataset did not provide the individual-level information required for such analyses.

Consequently, validity and practicality were interpreted according to their respective evaluation criteria, whereas the *akhlaq* results were reported separately as descriptive before-and-after evidence. This analytical distinction was maintained to avoid interpreting observed score changes as statistically significant or causal effects of the developed teaching materials.

The practicality criteria were classified as:

**Table 2.** Practicality Percentage and Interpretation Categories

| Percentage | Category         |
|------------|------------------|
| 81–100%    | Very Practical   |
| 61–80%     | Practical        |
| 41–60%     | Fairly Practical |
| 21–40%     | Less Practical   |
| 0–20%      | Impractical      |

### 3. FINDINGS AND DISCUSSION

#### 3.1 Findings

The findings of this study reveal several important insights regarding the development and implementation of ICT-based Islamic Religious Education (PAI) teaching materials within blended learning courses at Universitas Putra Indonesia YPTK Padang. These findings illustrate the extent to which the developed materials were valid, practical, and effective in fostering both academic understanding and character development among students.

First, the study found that the validity level of the ICT-based PAI teaching materials was very high, achieving a score of 90%. This strong validity score was obtained through expert evaluations involving material experts, media experts, and instructional design specialists. The experts emphasized that the content presented in the teaching materials was accurate, aligned with Islamic educational principles, and relevant to the needs of students in higher education. They also noted that the integration of ICT elements—such as multimedia resources, interactive modules, and online discussion platforms—greatly enhanced the clarity and accessibility of the materials. This indicates that the developed teaching materials meet the academic and pedagogical standards required for higher education, making them suitable for use within blended learning environments.

Second, the results showed that the teaching materials were highly practical based on the lecturer evaluation. Across the ten reported practicality indicators, the scores ranged from 90% to 95%, with an

average of 92.4%. The practicality assessment involved two PAI lecturers. Both lecturers indicated that the materials were easy to use, well-structured, and compatible with the blended learning model.

The reported practicality indicators show that the digital features and blended-learning organization were positively assessed by the lecturers. The highest scores were obtained for easy navigation, optimal e-learning utilization, and integration of online and offline activities. These findings indicate that the developed materials were considered user-friendly and feasible to implement in the assessed blended-learning context. Student responses are not presented in a separate practicality table in the current manuscript; therefore, no combined lecturer–student practicality percentage is claimed.

The interactive elements within the materials encouraged students to reflect on real-life moral challenges, analyze ethical dilemmas, and connect Islamic teachings with their daily behavior. As a result, students not only gained knowledge but also demonstrated a deeper understanding and practice of Islamic values.

Additionally, the findings highlight that the integration of ICT in PAI learning contributes to higher student motivation and engagement. Students indicated that learning through multimedia and digital platforms felt more relevant to their needs as learners in the digital era. They appreciated the flexibility offered by blended learning, which allowed them to study independently while still receiving guidance through face-to-face sessions. The dynamic and interactive nature of the materials created a more meaningful learning experience that supported the development of both cognitive and affective competencies.

Overall, the findings confirm that the ICT-based PAI teaching materials developed in this study are valid, practical, and effective for use in blended learning environments. The materials successfully support the enhancement of students' moral character while simultaneously improving their understanding of Islamic teachings. These results underscore the importance of integrating technology into Islamic education as a strategic response to the challenges of the digital age, ensuring that learning remains engaging, relevant, and transformative for students.

The results of the development of ICT based Islamic Religious Education (PAI) teaching materials for blended learning courses at Universitas Putra Indonesia YPTK Padang, based on the development model proposed by Plomp (2013). The development of ICT-based PAI teaching materials for blended learning at Universitas Putra Indonesia YPTK Padang consisted of three main stages: Preliminary Research, Development or Prototyping Phase, and Assessment Phase (Sitompul et al., n.d.).

The goal of this development was to produce ICT-based PAI teaching materials for blended learning that are valid, practical, and effective in addressing various challenges in PAI instruction at Universitas Putra Indonesia YPTK Padang. The researcher conducted a systematic data collection process following the research objectives and procedures to produce ICT-based PAI teaching materials that would effectively improve students' moral character while meeting the criteria of validity, practicality, and effectiveness (Humaeroh, 2023).

Following the stages of the Plomp development model, this study resulted in the development of ICT-based PAI teaching materials designed for blended learning at Universitas Putra Indonesia YPTK Padang, with a particular emphasis on supporting students' moral development (akhlaq). The results of each development stage are presented below.

1. Preliminary Research Results

The preliminary research phase served as the initial investigation aimed at conducting needs and context analysis. This stage involved several analyses, as described below.

2. Results of Needs and Context Analysis

The needs analysis is the first step in development research. In this stage, the researcher collected and analyzed information and defined problems that occurred during the learning process. This analysis aimed to evaluate the type of PAI teaching materials required in the field to support the learning process, thus highlighting the need for developing ICT-based PAI teaching materials for blended learning at Universitas Putra Indonesia YPTK Padang.

At this stage, a student analysis was also conducted to ensure the developed product aligned with the characteristics and needs of UPI YPTK students. This analysis focused on designing products that could be easily used by students and effectively implemented by lecturers. To gain a better understanding of the learning context, interviews were conducted with two PAI lecturers at Universitas Putra Indonesia YPTK Padang: Dr. H. Zainal A. Haris, S.Ag., M.Si. and Dr. Ashabul Fadhli, S.H.I., M.H.I.

The results of the interviews with PAI lecturers are presented in Table 3 below.

**Table 3.** Interview Results with PAI Lecturers

| No | Question                                                                                                                        | Lecturer Name                        | Response                                                                                                                                                                                                                                                                                                                   |
|----|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | What are the main challenges faced by lecturers in blended learning courses for PAI at Universitas Putra Indonesia YPTK Padang? | Dr. H. Zainal A. Haris, S.Ag., M.Si. | The challenges include a lack of technological readiness and digital skills among lecturers, limited effective interaction with students during online sessions, and difficulties in assessing students' moral attitudes since behaviors such as discipline in worship and discussion manners cannot be observed directly. |
| 2  | What are the weaknesses of blended learning in the PAI course at Universitas Putra Indonesia YPTK Padang?                       | —                                    | The main weaknesses are the limited effectiveness in instilling religious and moral values due to minimal direct interaction, as well as limited technological competence among some lecturers and students.                                                                                                               |
| 3  | Can ICT help lecturers in understanding and delivering PAI materials at Universitas Putra Indonesia YPTK Padang?                | —                                    | Yes, ICT can assist lecturers in understanding and delivering PAI materials by providing broader and more interactive access to digital learning resources.                                                                                                                                                                |
| No | Question                                                                                                                        | Lecturer Name                        | Response                                                                                                                                                                                                                                                                                                                   |
| 1  | What are the main challenges faced by lecturers in blended learning courses for PAI at Universitas Putra Indonesia YPTK Padang? | Dr. Ashabul Fadhli, S.H.I., M.H.I.   | Similar challenges were identified, including insufficient technological readiness and digital literacy among lecturers, limited online interaction, and difficulty in assessing students' moral conduct without direct observation of their behavior during classes or discussions.                                       |
| 2  | What are the weaknesses of blended learning in the PAI course at Universitas Putra Indonesia YPTK Padang?                       | —                                    | The weaknesses include limited effectiveness in developing students' moral and spiritual values due to reduced face-to-face interaction, as well as limited technological competence among both lecturers and students.                                                                                                    |
| 3  | Can ICT help lecturers in understanding and                                                                                     | —                                    | Yes, ICT can help lecturers in both understanding and                                                                                                                                                                                                                                                                      |

|                                                                      |                                                                                                        |
|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| delivering PAI materials at Universitas Putra Indonesia YPTK Padang? | delivering PAI materials through access to a wide range of digital and interactive learning resources. |
|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|

**Table 4.** Strategic Solutions Based on Lecturer Interview Results:  
Problems in Blended PAI Learning at Universitas Putra Indonesia YPTK Padang

| No | Problems                                                                                         | Strategic Solutions                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Lack of technological readiness and digital skills among lecturers                               | <ul style="list-style-type: none"> <li>- Conduct intensive and periodic ICT training and workshops for lecturers.</li> <li>- Provide technical assistance through ICT experts or laboratory staff.</li> <li>- Develop digital modules and practical guides for using LMS platforms and interactive media.</li> </ul>                                                                                                                                                          |
| 2  | Limited effective online interaction between lecturers and students                              | <ul style="list-style-type: none"> <li>- Optimize interactive features within LMS platforms such as discussion forums, live chat, video conferencing (Zoom/Google Meet), and interactive polls.</li> <li>- Schedule regular face-to-face sessions (at least once every two weeks) to strengthen interpersonal communication.</li> <li>- Encourage the use of educational social media (e.g., WhatsApp Groups, Telegram) for informal but responsive communication.</li> </ul> |
| 3  | Difficulty in assessing students' moral behavior directly                                        | <ul style="list-style-type: none"> <li>- Develop self-assessment, peer-assessment, and reflective evaluation instruments via e-portfolios.</li> <li>- Implement behavioral observation through collaborative assignments, online discussions, and daily moral journals.</li> <li>- Involve academic mentors or advisory lecturers to monitor students' character development regularly.</li> </ul>                                                                            |
| 4  | Limited effectiveness in instilling moral and religious values due to minimal direct interaction | <ul style="list-style-type: none"> <li>- Integrate moral values into every learning activity, both online and offline, in contextual and applicable ways.</li> <li>- Develop thematic video lessons containing Islamic moral stories and exemplary narratives to inspire empathy among students.</li> <li>- Conduct online religious routines such as short sermons (kultum), group Qur'an recitations via Zoom, and weekly worship challenges.</li> </ul>                    |
| 5  | Limited technological literacy among students                                                    | <ul style="list-style-type: none"> <li>- Provide ICT orientation and platform usage tutorials at the beginning of the semester.</li> <li>- Offer technical support and an online ICT helpdesk.</li> <li>- Simplify the platforms and tools used to match students' basic digital abilities.</li> </ul>                                                                                                                                                                        |
| 6  | Limited availability of ICT-based PAI learning resources                                         | <ul style="list-style-type: none"> <li>- Develop and compile digital teaching materials such as interactive modules, e-books, short videos, and app-based quizzes.</li> <li>- Encourage collaboration among PAI lecturers to create shared digital content banks.</li> <li>- Promote the use of open educational resources (OER) such as YouTube Edu, Rumah Belajar, and the Ministry of Religious Affairs' e-learning portals.</li> </ul>                                    |

Based on the interviews with the two PAI lecturers, it can be concluded that the lack of readiness in teaching materials and digital skills has hindered lecturers from optimally designing, delivering, and evaluating ICT-based learning. Limited online interaction also obstructs mentoring, discussion, and clarification of PAI learning content, which often requires personal engagement. Moreover, assessing students' moral aspects remains difficult due to the absence of direct behavioral observation—such as etiquette during discussions, responsibility, and politeness during online learning sessions. These challenges have contributed to students' low motivation to study PAI materials independently. Furthermore, a questionnaire was distributed to several students at Universitas Putra Indonesia YPTK Padang, and the summary of student responses is presented in Table 4.3 below.

**Table 5.** Interview Results with Students

| No | Question                                                                                                                  | Response                                                                                                                                                                                                                                                                                     |
|----|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | What are the challenges faced by students in blended learning for PAI courses at Universitas Putra Indonesia YPTK Padang? | As a student, I find it difficult to understand ICT-based PAI teaching materials in blended learning because of unstable internet access, limited ability to use online learning technologies, and minimal direct guidance from lecturers, which makes it harder to comprehend the material. |
| 2  | What are the weaknesses of blended learning for PAI courses at Universitas Putra Indonesia YPTK Padang?                   | I feel that the main weaknesses include limited direct interaction between lecturers and students, insufficient technological infrastructure, low digital literacy among some students, and inadequate supervision of students' engagement and understanding during online classes.          |
| 3  | Can ICT help students understand PAI materials at Universitas Putra Indonesia YPTK Padang?                                | Yes, ICT helps me as a student to better understand PAI materials by providing wide and flexible access to digital learning resources such as video lessons and online discussion forums that support blended learning.                                                                      |

Based on interviews with three students, it can be concluded that students have not yet been able to fully comprehend PAI materials. They perceive PAI courses as relatively easy, yet they still require engaging teaching materials that can motivate them and foster interest in learning PAI. Consequently, students tend to depend heavily on lecturers' explanations rather than exploring materials independently. Moreover, the current teaching materials and learning activities have not been well integrated with students' daily lives. This condition limits PAI learning to classroom contexts and prevents students from truly understanding the essence of moral values (*akhlak*).

### 3.1.1 Literature Analysis Results

A literature analysis was conducted to review relevant theories and existing blended learning products that support the development of ICT-based PAI teaching materials for blended learning at Universitas Putra Indonesia YPTK Padang. The results of this analysis are summarized in Table 4.4 below.

This literature review served as a guideline for developing ICT-based teaching materials and designing the prototype. Theoretical and empirical foundations identified in this review informed the construction of Prototype I of the ICT-based PAI teaching materials.

**Table 6.** Supporting Aspects for the Development of ICT-Based PAI Teaching Materials

| Supporting Theory                                                                          | References   |
|--------------------------------------------------------------------------------------------|--------------|
| Development Stages:<br>– Preliminary Research<br>– Prototyping Stage<br>– Assessment Phase | Plomp (2013) |

|                                                                                                                                                                                       |                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Theoretical Foundation – Islamic Religious Education (PAI):<br>Definition, Function, and Benefits of PAI Teaching Materials;<br>Forms and Types of PAI Teaching Materials in Learning | Aziz & Najmudin (2020); Adri (2023); Paputungan et al. (2024); Inayati (2023)            |
| ICT:<br>Definition, Functions, and Benefits of ICT;<br>Types and Applications of ICT in PAI Learning                                                                                  | Pulungan (2017); Tinio (2003); Nanik (2021)                                              |
| Blended Learning:<br>Definition, Functions, and Models of Blended Learning                                                                                                            | Garner & Oke (2015); Hrastinski (2019); Abdullah (2018); Puspitarini (2022); Sari (2016) |
| Morality (Akhlaq):<br>Definition, Types, Functions, and Role of Morality in PAI Learning                                                                                              | Azhari et al. (2023); Nurdin (n.d.); Husin (2016); Triyanto & Ramly (2022)               |

**Table 6.** Supporting Aspects for the Development of ICT-Based Islamic Religious Education (PAI) Teaching Materials

| Supporting Theory                                                                         | References                                       |
|-------------------------------------------------------------------------------------------|--------------------------------------------------|
| Development Stages<br>- Preliminary research<br>- Prototyping stage<br>- Assessment phase | Plomp (2013)                                     |
| Theoretical Foundation<br>Islamic Religious Education (PAI) Teaching Materials            |                                                  |
| Definition of PAI Teaching Materials                                                      | Aziz & Najmudin (2020)                           |
| Functions and Benefits of PAI Teaching Materials                                          | Adri (2023)                                      |
| Types and Forms of PAI Teaching Materials in PAI Learning                                 | Paputungan et al. (2024); Inayati (2023)         |
| Information and Communication Technology (ICT)                                            |                                                  |
| Definition of ICT                                                                         | Pulungan (2017)                                  |
| Functions and Benefits of ICT                                                             | Tinio (2003)                                     |
| Types and Forms of ICT in PAI Learning                                                    | Pulungan (2017); Nanik (2021)                    |
| Blended Learning                                                                          |                                                  |
| Definition of Blended Learning                                                            | Garner & Oke (2015)                              |
| Functions and Benefits of Blended Learning                                                | Hrastinski (2019)                                |
| Types and Models of Blended Learning                                                      | Abdullah (2018); Puspitarini (2022); Sari (2016) |
| Morality (Akhlaq)                                                                         |                                                  |
| Definition of Akhlaq                                                                      | Azhari et al. (2023)                             |
| Types of Akhlaq                                                                           | Nurdin (n.d.); Husin (2016)                      |
| Functions and Benefits of Akhlaq in PAI Learning                                          | Triyanto & Ramly (2022)                          |

### 3.1.2 Results of the Development and Prototyping Phase

This stage continues from the initial research phase and aims to produce a valid ICT-based Islamic Religious Education (PAI) teaching material for blended learning at Universitas Putra Indonesia YPTK Padang. The main activities in this phase are as follows:

## 1. Design of the Prototype

At this stage, the ICT-based PAI teaching materials were designed for blended learning at Universitas Putra Indonesia YPTK Padang. The design process aimed to improve students' moral character (akhlaq). The design activities were carried out as follows:

### a) Initial Product Design

The initial design involved several preparatory steps before developing the ICT-based PAI teaching materials for blended learning, including: Selecting appropriate images and interview excerpts for the cover design that reflect the product's content.

Defining the introductory section to present the ICT-based PAI teaching materials. Structuring and formulating materials related to morality (akhlaq) and providing usage guidelines. Designing a conceptual map aligned with the learning objectives. Organizing and uploading the learning materials into the Learning Management System (LMS). Arranging the order of presentation for ease of use by students and instructors.

### b) Development of ICT-Based PAI Teaching Materials

Following the design stage, the product was further developed through the following steps:

#### (1) Product Identity

(2) Format: Teaching Material (Product) Title: ICT-Based Islamic Religious Education (PAI) Teaching Materials for Blended Learning at Universitas Putra Indonesia YPTK Padang

**Table 7.** Validation involved two aspects: content validity and construct validity

| No | Validator                     | Area of Expertise    |
|----|-------------------------------|----------------------|
| 1  | Prof. Dr. Zainal Asril, M.Pd. | Construction/Content |
| 2  | Dr. Zulvia Trinova, M.Pd.     | Content & ICT        |
| 3  | Dr. Fauza Masyhudi, M.A.      | Islamic Education    |
| 4  | Dr. M. Zalnur, M.Ag.          | Islamic Education    |
| 5  | Dr. Hadel, M.A., M.Pd.        | Language             |

## 2. Content Feasibility

Five indicators were used to assess content validity, with scores ranging from 91% to 95%, showing that the materials are relevant, current, and aligned with Islamic values and the higher education curriculum.

**Table 8.** Content Validity Scores of the ICT-Based PAI Teaching Materials

| Indicator                                  | Validity Score |
|--------------------------------------------|----------------|
| Content alignment with learning objectives | 94%            |
| Relevance of material to moral formation   | 93%            |
| Relevance to technological development     | 92%            |
| Alignment with curriculum standards        | 91%            |
| Integration of Islamic values              | 95%            |

## 3. Language Feasibility

The language validity score also ranged between 91%–95%. Validators confirmed that the language is communicative, grammatically correct, and clear.

**Table 9.** Language Validity Scores of the ICT-Based PAI Teaching Materials

| Indicator                              | Validity Score |
|----------------------------------------|----------------|
| Communicative language                 | 92%            |
| Proper grammar usage                   | 93%            |
| Consistency of language style          | 91%            |
| Clarity and effectiveness of sentences | 94%            |
| Accessibility of terminology           | 95%            |

#### 4. Construct Feasibility

The construct aspect, focusing on design, interactivity, accessibility, and coherence with learning objectives, scored 91%–95%. This demonstrates that the ICT-based PAI materials are well-structured, engaging, and pedagogically sound.

**Table 10.** Construct Validity Scores of the ICT-Based PAI Teaching Materials

| Indicator                          | Validity Score |
|------------------------------------|----------------|
| Visual appeal                      | 93%            |
| Visual support for material        | 92%            |
| Interactivity                      | 91%            |
| Accessibility                      | 94%            |
| Design consistency with objectives | 95%            |

Thus, the product is considered valid and ready for the practicality phase.

#### 1. Prototype Revision Results

Revisions were made based on validator feedback during the FGD held online via Zoom on Thursday, November 14, 2024 (13:30–16:00 WIB). Key suggestions included clarifying the title, refining theoretical background, ensuring consistency in terminology, and emphasizing the relationship between akhlaq and religiosity.

**Table 11.** Expert Validators' Suggestions for Prototype Revision

| Validator                             | Key Suggestions                                                    |
|---------------------------------------|--------------------------------------------------------------------|
| Prof. Dr. H. Syafruddin Nurdin, M.Pd. | Add theoretical, empirical, and juridical foundations              |
| Dr. Hadel, M.A., M.Pd.                | Ensure consistency in terminology                                  |
| Prof. Dr. Zainal Asril, M.Pd.         | Clarify development design and title                               |
| Dr. Zulvia Trinova, M.Pd.             | Refine general guidelines and ICT explanation                      |
| Dr. Fauza Masyhudi, M.A.              | Focus only on one material (Integration of Iman, Islam, and Ihsan) |
| Dr. M. Zalnur, M.Ag.                  | Clarify the link between morality and religiosity                  |
| Dr. Aprizal Ahmad, M.Pd.              | Simplify structure and ensure relevance                            |

After revision, the product title became: "ICT-Based Islamic Religious Education (PAI) Teaching Materials for Blended Learning at Universitas Putra Indonesia YPTK Padang."

#### 2. Results of the Assessment Phase

This phase aims to determine whether the revised ICT-based PAI teaching material meets the specified standards. Summative evaluation was carried out to measure practicality and effectiveness through questionnaires distributed to 2 PAI lecturers and 29 students of the Information Systems Department.

#### a. Practicality Test by Lecturers

Based on Nieveen (2013), practicality refers to how easily a product can be implemented. In this study, the practicality evaluation was conducted by two PAI lecturers. The ten reported indicators obtained scores ranging from 90% to 95%, with an average of 92.4%. The highest score (95%) was obtained for the integration of online and offline activities, followed by easy navigation and optimal e-learning utilization (94% each).

**Table 12.** Lecturer-Rated Practicality Scores of the ICT-Based PAI Teaching Materials

| Indicator                                    | Practicality Score |
|----------------------------------------------|--------------------|
| Clear usage instructions                     | 90%                |
| Complete learning materials                  | 92%                |
| Easy navigation                              | 94%                |
| Technology support                           | 93%                |
| Simple presentation                          | 91%                |
| Appropriate time allocation                  | 90%                |
| Balanced online and offline duration         | 92%                |
| Availability of supporting facilities        | 93%                |
| Optimal e-learning utilization               | 94%                |
| Integration of online and offline activities | 95%                |

These results indicate that the materials are user-friendly and efficient for both lecturers and students in blended learning environments.

#### b. Effectiveness Test

Effectiveness was assessed by comparing the reported aggregate scores for students' moral behavior (*akhlaq*) before and after using the ICT-based PAI materials. The analysis is descriptive because the manuscript does not report individual pretest-posttest data, an inferential statistical test, or an effect-size estimate.

| Indicator                             | Before | After | Improvement (%) |
|---------------------------------------|--------|-------|-----------------|
| Performing prayers on time            | 2      | 5     | 150%            |
| Reading the Qur'an                    | 2      | 4     | 100%            |
| Avoiding immoral acts                 | 3      | 5     | 66.7%           |
| Respect for parents/lecturers         | 3      | 5     | 66.7%           |
| Honesty                               | 3      | 5     | 66.7%           |
| Trustworthiness                       | 3      | 5     | 66.7%           |
| Participation in religious activities | 2      | 5     | 150%            |
| Maintaining social ties (silaturahmi) | 3      | 5     | 66.7%           |
| Practicing Islamic values daily       | 3      | 5     | 66.7%           |
| Social morality                       | 3      | 5     | 66.7%           |

The ten *akhlaq* indicators showed increases in the reported aggregate scores. For seven indicators, the relative increase was 66.7%, while performing prayers on time and participation in religious activities increased by 150%, and reading the Qur'an increased by 100%. Across the ten indicators, the total reported score increased from 27 before implementation to 49 after implementation, out of a maximum possible total of 50. This corresponds to an increase of 22 score points, or 81.5% relative to the pretest total ( $22/27 \times 100\%$ ). These results provide descriptive evidence of improvement in the measured *akhlaq* indicators. However, because no inferential statistical analysis or effect-size estimate is reported, the findings should not be interpreted as demonstrating statistically significant improvement or establishing a causal effect of the teaching materials.

### 3.2 Discussion

The central contribution of this study is the integration of ICT, blended learning, and *akhlaq*-oriented learning within a systematically developed PAI teaching material. The novelty, therefore, lies in the instructional design relationship among these elements, rather than in the use of technology itself. The preliminary analysis showed that existing PAI learning at the study site was constrained by conventional materials, limited online interaction, and difficulty in facilitating and observing moral learning. The developed product responds to these conditions by combining digital content with opportunities for face-to-face clarification, online interaction, contextual cases, and reflective activities. This design directly addresses the gap identified in the literature review: existing work has often emphasized digital platforms or e-learning systems, whereas fewer studies have examined systematically developed PAI materials that integrate Islamic values, interactive ICT components, blended learning, and character development in higher education.

The validity result of 90% is important not because a high percentage alone proves educational impact, but because expert review indicates that the content, language, and construct of the product were judged sufficiently aligned with PAI learning objectives and the intended blended-learning context. This finding supports the argument that ICT should function as part of instructional design rather than as an additional technological layer. In other words, the value of the product is created by the alignment between content, learning activities, digital affordances, and the moral purposes of PAI. This interpretation is consistent with the literature cited in the manuscript, which emphasizes the potential of technology-supported environments to increase access, engagement, and contextualized learning (Bond et al., 2020; Al-Fraihat et al., 2020).

The practicality result provides a second piece of evidence for this interpretation. The average lecturer-rated practicality of 92.4% suggests that the product can be implemented within the assessed blended-learning setting, particularly because navigation, e-learning utilization, and the integration of online and offline activities received high ratings.

The mechanism is pedagogically meaningful: when digital materials are organized clearly and linked to face-to-face activities, the lecturer can shift from being the sole source of information toward a facilitator of discussion, clarification, and reflection. This is particularly relevant to PAI because moral learning requires more than exposure to concepts; it requires opportunities to interpret values, discuss dilemmas, and connect principles with behavior.

The descriptive changes in the reported *akhlaq* indicators should nevertheless be interpreted with methodological caution. The aggregate scores increased across the ten indicators, but the available manuscript does not provide individual pretest-posttest data, a documented, validated, and reliable *akhlaq* scale, an inferential statistical test, or an effect-size estimate. Consequently, the results demonstrate an observed pattern of improvement rather than statistical evidence that the materials caused a significant change. This distinction strengthens rather than weakens the contribution of the study because it separates evidence about product feasibility from evidence about causal effectiveness. The findings therefore support the more limited conclusion that the developed materials were associated with higher reported *akhlaq* scores in the assessed implementation, while stronger claims require a more rigorous effectiveness design.

The pattern of change also helps explain why the design may have been useful. Indicators related to religious practice and moral behavior increased after implementation, while the learning activities were designed to connect Islamic concepts with everyday situations. A plausible pedagogical mechanism is that repeated movement between digital explanation, contextual examples, reflection, and lecturer-guided discussion gives students multiple opportunities to process the same value at cognitive, reflective, and behavioral levels. This interpretation is compatible with constructivist learning principles: students are more likely to construct meaningful understanding when new concepts are connected with contextual experiences rather than received only as abstract information.

In PAI, such contextualization is particularly relevant because the intended outcome includes the internalization and application of values, not only conceptual recall.

The findings also extend the meaning of blended learning in Islamic education. Blended learning is often justified in terms of flexibility and access, but the present design suggests an additional function: it can create a pedagogical sequence in which online resources support preparation and individual exploration, while face-to-face interaction provides clarification, dialogue, feedback, and moral reasoning. This division of functions can help address one of the weaknesses identified in the preliminary analysis, namely, limited direct interaction in online learning. Thus, the contribution is not simply that PAI can be delivered through blended learning, but that the two modes can be deliberately assigned complementary roles in supporting both cognitive understanding and value-oriented learning.

This interpretation is broadly consistent with prior literature cited in the manuscript, which reports that ICT-supported learning can improve participation, motivation, and independent learning and that digital religious education can facilitate reflective and contextualized learning (Bond et al., 2020; Al-Fraihat et al., 2020). At the same time, the present study adds a product-development perspective that is less visible when technology is discussed mainly as a platform.

The study treats the teaching material itself as the unit of innovation: its structure, activities, digital elements, and moral orientation are intentionally designed together and then subjected to expert and practicality evaluation. The contribution is therefore a bridge between the literature on technology-mediated learning and the pedagogical objectives of Islamic character education.

From the perspective of ICT-based Islamic education, the study suggests that technology becomes educationally meaningful when its affordances are matched with the epistemic and ethical characteristics of PAI. Multimedia can clarify concepts, interactive tasks can stimulate participation, and digital discussion can extend reflection beyond classroom time; however, these functions do not automatically produce character development. The instructional material must deliberately connect technology with moral content, contextual problems, reflective prompts, and lecturer guidance. This explains why the product should be understood as a pedagogical system rather than a collection of digital files.

The study also contributes to character education by emphasizing continuity between knowing, reflecting, and practicing. The reported *akhlaq* indicators were not presented merely as knowledge outcomes; the activities encouraged students to consider how Islamic values relate to everyday conduct. This provides a theoretical implication for PAI: character-oriented learning in digital environments should preserve opportunities for reflection and social interaction rather than reducing religious learning to online content consumption. The blended format is valuable precisely because it can connect individual digital engagement with interpersonal dialogue and lecturer mediation.

However, the findings do not justify the claim that ICT alone produced the observed changes. Other factors, including lecturer guidance, students' prior religious experiences, peer interaction, and the novelty of the learning materials, may also have contributed. The lack of a control group and the absence of inferential analysis prevent causal attribution. This limitation is especially important for character outcomes because *akhlaq* involves behavior that may require sustained observation over time. The study therefore provides an initial empirical indication and a plausible pedagogical explanation, rather than definitive causal proof.

Taken together, the evidence suggests a three-level contribution. At the product level, the study offers ICT-based PAI teaching materials designed specifically for blended learning and moral-value internalization. At the pedagogical level, it demonstrates how online and face-to-face activities can be organized as complementary spaces for explanation, interaction, reflection, and value application. At the theoretical level, it proposes that the effectiveness of ICT in Islamic education depends less on technology adoption itself than on the alignment among digital affordances, instructional structure, contextual learning, and the moral purposes of PAI. This shifts the discussion from "whether ICT is useful" to "how ICT should be pedagogically designed to support Islamic character education."

The practical implication is that lecturers should not treat the developed materials as a replacement for interaction, but as a structured resource that enables more purposeful interaction. Online activities can be used for preparation, exploration, and reflection, while face-to-face sessions can be prioritized for dialogue, clarification, feedback, and discussion of ethical dilemmas.

Such an arrangement also responds to the preliminary finding that limited online interaction and difficulty in directly observing moral conduct are important challenges in blended PAI learning.

For future research, the proposed contribution should be tested with a stronger effectiveness design. A validated and reliable *akhlaq* instrument should be documented, individual pretest-posttest scores should be retained, and inferential analysis with an appropriate effect-size measure should be conducted. A comparison group or quasi-experimental design would further strengthen causal interpretation. Longitudinal behavioral observation would also be valuable because internalization of *akhlaq* cannot be fully captured through short-term self-reported or aggregate scores.

In summary, the study moves beyond a descriptive claim that ICT-based materials are useful by identifying a pedagogical mechanism and a specific contribution: ICT, blended learning, and Islamic character development are intentionally integrated within the teaching-material design. The high validity and lecturer-rated practicality support the feasibility of this design, while the observed pretest-posttest changes provide preliminary descriptive evidence concerning *akhlaq* outcomes. The principal contribution is therefore a value-oriented blended-learning design for PAI, with the important qualification that stronger claims about effectiveness and significant improvement require more rigorous measurement and statistical evidence.

The validity and practicality results indicate that the developed materials meet the reported quality criteria, with overall validity of 90% and average lecturer-rated practicality of 92.4%. The effectiveness evidence is more appropriately presented as descriptive pretest-posttest change in the reported *akhlaq* indicators rather than as a single effectiveness percentage. The study's novelty lies in integrating ICT affordances, blended-learning organization, and explicit moral-value learning within one systematically developed PAI instructional product. This contribution is relevant to blended learning, ICT-based Islamic education, and character education because it positions technology as a pedagogical mediator for reflection, dialogue, and value application rather than merely as a delivery tool.

#### 4. CONCLUSION

This study successfully developed ICT-based Islamic Education (PAI) teaching materials for blended learning in higher education using the Plomp development model. The main findings indicate that the developed materials demonstrated strong product quality, achieving an overall validity score of 90% and an average lecturer-rated practicality score of 92.4%, suggesting that the materials were considered valid, user-friendly, and feasible for implementation in the assessed blended-learning context. In addition, descriptive comparisons of ten students' *akhlaq* indicators showed an increase in the aggregate score from 27 before implementation to 49 after implementation, indicating a positive pattern of change following the use of the materials. However, these findings should be interpreted cautiously because the study was conducted in a single institutional context with a relatively small number of participants, the practicality assessment was based on only two PAI lecturers, and the assessment of *akhlaq* relied on aggregate pretest-posttest scores without a comparison group, individual-level data, inferential statistical testing, or effect-size estimation. Furthermore, the available information regarding the psychometric properties of the *akhlaq* instrument was limited; therefore, the observed changes cannot be interpreted as conclusive evidence of the causal effectiveness of the developed materials. Future research should evaluate the teaching materials with larger and more diverse samples across multiple institutions, employ validated and reliable instruments for measuring *akhlaq*, incorporate control or comparison groups and individual-level pretest-posttest data, and apply appropriate inferential statistical analyses and effect-size measures. Longitudinal studies are also recommended to determine whether changes in students' moral development are sustained over time.

and to provide stronger evidence regarding the effectiveness and broader applicability of ICT-based PAI teaching materials in blended-learning environments.

## REFERENCES

- Abidin, Z. (2020). ICT integration in Islamic education: Opportunities and challenges. *Journal of Islamic Education*, 5(2), 112–125.
- Abidin, Z., & Putra, A. (2021). Blended learning effectiveness in higher education. *International Journal of Instructional Technology*, 14(3), 55–72.
- Abou El-Seoud, M. (2014). E-learning and students' motivation in online learning. *International Journal of Emerging Technologies*, 9(3), 20–26.
- Al-Farabi. (2019). Digital pedagogy in Islamic higher education. *Journal of Contemporary Islamic Studies*, 11(1), 44–59.
- Ally, M. (2019). *Mobile learning: Transforming education*. Athabasca University Press.
- Almutairi, F. (2021). ICT-based curriculum and student engagement. *Journal of Education and Practice*, 12(5), 101–110.
- Amri, S. (2020). Digital literacy among Islamic education lecturers. *Journal of Social Science Research*, 8(2), 221–233.
- Anshori, A. (2019). *Tasawuf dan pembelajaran daring di era digital*. LKiS.
- Arsad, N. (2022). Online instructional design in Islamic universities. *Journal of Islamic Pedagogy*, 7(1), 45–60.
- Arsyad, A. (2015). *Media pembelajaran*. RajaGrafindo Persada.
- Azra, A. (2012). *Pendidikan Islam: Tradisi dan modernisasi menuju milenium baru*. Kencana.
- Bawden, D. (2008). Digital literacy in education. *Journal of Documentation*, 64(3), 345–361.
- Belawati, T. (2019). *Pembelajaran daring: Teori dan praktik*. Universitas Terbuka Press.
- Branch, R. (2010). *Instructional design: The ADDIE approach*. Springer.
- Clark, R. (2017). *E-learning and the science of instruction*. John Wiley & Sons.
- Creswell, J. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches*. SAGE.
- DeGeorge, G. (2020). The impact of digital tools on higher education learning. *Journal of Educational Technology*, 17(3), 51–68.
- Dewi, S. (2021). Character education in online learning environments. *Journal of Character Studies*, 4(1), 55–70.
- Dwivedi, Y. (2020). Digital learning adoption during COVID-19. *Journal of Business Research*, 116, 369–380.
- Fauzan, F. (2020). *Integrasi teknologi dalam pembelajaran PAI*. UIN Imam Bonjol Press.
- Ferguson, R. (2017). Learning analytics in digital classrooms. *Journal of Learning Analytics*, 4(2), 5–21.
- Garrison, D. (2010). *E-learning in the 21st century*. Routledge.
- Ghazali, A. (1995). *Ihya' Ulumuddin*. Dar al-Kutub al-'Ilmiyyah.
- Graham, C. (2013). Emerging practices in blended learning. In *Handbook of distance education* (pp. 333–350). Routledge.
- Gunawan, I. (2017). *Metode penelitian pendidikan*. Alfabeta.
- Hadijah, S. (2021). ICT in teaching Islamic values. *International Journal of Islamic Education*, 15(2), 155–175.
- Harasim, L. (2012). *Learning theory and online technologies*. Routledge.
- Hidayat, R. (2021). Islamic education transformation in the digital era. *Journal of Islamic Educational Thought*, 8(1), 1–15.
- Hodges, C. (2020). The difference between emergency remote teaching and online learning. *EDUCAUSE Review*.
- Husna, S. (2020). Online character education in Islamic higher institutions. *Indonesian Journal of Moral Education*, 6(2), 87–101.

- Johnson, L. (2016). *Digital learning strategies*. Education Press.
- Khan, B. (2015). *E-learning frameworks and models*. Routledge.
- Kuntoro, A., & Sudiyono, S. (2020). Student readiness for online learning. *Journal of e-Learning Studies*, 2(4), 88–99.
- Laurillard, D. (2014). *Teaching as a design science*. Routledge.
- Lavelle, M. (2019). Student engagement in virtual classrooms. *Journal of Digital Education*, 6(1), 23–37.
- Moleong, L. J. (2019). *Metodologi penelitian kualitatif*. Remaja Rosdakarya.
- Moore, M. (2011). *Distance education theory*. Routledge.
- Muthohar, S. (2022). Blended learning dalam pendidikan Islam. *Jurnal Pendidikan Islam*, 10(2), 155–170.
- Nasution, H. (2001). *Filsafat dan mistisisme dalam Islam*. Bulan Bintang.
- Nata, A. (2011). *Perspektif Islam tentang strategi pembelajaran*. Kencana.
- OECD. (2021). *Digital education outlook 2021*. OECD Publishing.
- Oliver, R. (2010). ICT-based learning design. *Journal of Learning Design*, 3(2), 1–10.
- Park, Y. (2011). A pedagogical framework for mobile learning. *International Review of Research in Open and Distributed Learning*, 12(2), 78–102.
- Picciano, A. (2017). Theories and frameworks for online education. *Online Learning Journal*, 21(3), 166–190.
- Prensky, M. (2010). *Teaching digital natives*. SAGE.
- Rahman, F. (2018). Islamic pedagogy in modern learning contexts. *Journal of Islamic Studies*, 24(1), 15–32.
- Riyadi, A. (2020). ICT-based moral education strategies. *International Journal of Islamic Thought*, 18(1), 75–88.
- Roblyer, M. (2015). *Integrating educational technology into teaching*. Pearson.
- Rosyadi, S. (2017). *Pendidikan karakter di era global*. Alfabeta.
- Salmon, G. (2013). *E-tivities: The key to active online learning*. Routledge.
- Sanjaya, W. (2016). *Strategi pembelajaran*. Kencana.
- Siagian, R. (2021). Student perception of blended learning. *Journal of Digital Learning*, 2(1), 14–25.
- Siemens, G. (2014). Connectivism: A learning theory for the digital age. *International Journal of Digital Learning*, 5(1), 1–10.
- Siregar, A. (2021). *Pembelajaran daring pada mata kuliah PAI*. Perdana Publishing.
- Smith, P. (2019). *Designing instruction for modern learners*. Pearson.
- Stake, R. (2010). *Qualitative case study research*. SAGE.
- UNESCO. (2021). *Digital learning readiness report*. UNESCO Publishing.
- United Nations Development Programme. (2021). *Human development report*.
- Yusuf, M. (2021). Islamic education and digital transformation. *Journal of Islamic Values*, 9(2), 87–102.
- Zainuddin, A. (2022). Digital pedagogy in Islamic higher learning. *Journal of Islamic Epistemology*, 1(1), 1–20.
- Zhang, D. (2016). E-learning effectiveness and factors. *Journal of Online Learning*, 22(4), 33–49.