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Needs Analysis for the Development of a Problem-Based Learning Model Based on Deep Learning for the Topic of Faith (Iman) and Piety (Taqwa) in Elementary School Students

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A B S T R A C T

This study aims to analyze students' needs in moral (akhlaq) learning as a foundation for developing more contextual and relevant learning models and media. The research employed a descriptive quantitative approach using a needs-analysis questionnaire administered to elementary school students. The results indicate that the Learning Experience aspect obtained an average score of 85.54%, categorized as very high, showing that students generally experience moral learning positively and are actively engaged in the classroom. In contrast, the Difficulties and Challenges aspect obtained an average score of 35.62%, categorized as moderate, indicating that students still encounter difficulties in understanding abstract moral concepts and relating them to real-life situations. Meanwhile, the Need for New Learning Models and Media aspect reached 85.76%, also in the very high category, reflecting students' strong expectations for more interactive, contextual, and technology-supported learning environments. These findings reveal a gap between students' positive learning experiences and the limitations of existing instructional approaches. Therefore, the results provide a strong empirical foundation for developing a Problem-Based Learning (PBL) model supported by digital or AI-based learning media to enhance engagement, contextual understanding, and the internalization of moral values among elementary school students.

1. Introduction

Moral education in elementary schools is crucial for shaping students' character, especially in cultivating faith and piety as the moral foundation of Islamic education. However, in practice, many elementary schools in Indonesia still rely on conventional methods such as lectures and memorization. These approaches tend to make students passive and result only in normative knowledge without providing

opportunities for critical thinking or deeper internalization of values (Hafidah & Syarifin, 2024). Therefore, more interactive, contextual, and participatory learning approaches are needed. Through the Problem-Based Learning (PBL) model, students can actively think, solve real-world problems, and reflect on moral values in accordance with real-life contexts (Budiyono & Hardiansyah, 2021; Halimatus Sa'diyah Umalihayati et al., 2024). In addition, technological developments, particularly artificial intelligence (AI), offer new opportunities to support religious and character education in ways that are more personal, adaptive, and relevant to the dynamics of the modern era (Amilusholihah & Ramadhan, 2025; Hayuningsih et al., 2025; Suryana, 2025). By integrating PBL with AI-based technology, it is expected that a moral education model can be developed that not only provides cognitive understanding but also strengthens the internalization of faith, piety, and character in the digital era.

In the practice of moral education, teachers often face challenges in bridging abstract moral concepts with the real-life experiences of elementary school students. Many students perceive moral values merely as rules that must be obeyed, rather than as awareness that grows through critical thinking and personal experience. Moreover, curriculum demands and limited instructional time often push teachers to choose lecture-based methods because they are considered more practical. This situation causes the values of faith and piety to be understood only superficially rather than being fully internalized. Thus, the core issue lies not only in the methods used but also in the lack of opportunities for reflective and context-based learning experiences. In the practice of moral education, teachers frequently encounter difficulties in connecting abstract moral concepts with students' daily realities. Many learners understand moral values as obligations rather than as awareness developed through critical reasoning and personal experience (Haerudin, 2025; Khairani & Rosyidi, 2022). Additionally, curriculum pressures and limited instructional time often lead teachers to prioritize lectures as the most practical method (Fatah & Hadi, 2025; Setyowulandari et al., 2025). Consequently, values of faith and piety are not fully internalized but are instead grasped only at a surface level (Mungafif, 2025; Sari, 2025). Therefore, the fundamental issue lies not only in method selection but also in the absence of space for reflective and context-driven learning (Krisnajaya et al., 2024; Supriyandi et al., 2025).

The PBL model holds great potential to address these challenges because it provides opportunities for students to learn through situations that require value analysis, collaboration, and moral decision-making. Numerous studies have shown that PBL can enhance students' critical thinking, problem-solving abilities, and conceptual understanding (Darmawati & Mustadi, 2023; Rahmadana et al., 2023). When applied to moral education, PBL helps students understand that moral values do not stand alone but are connected to real problems encountered in life. This allows the internalization of values to become stronger because students engage actively not merely as recipients of information, but as problem solvers and moral decision-makers (Santiwi et al., 2022; Setiawan et al., 2023).

Beyond pedagogical approaches, technological advancements such as artificial intelligence (AI) and deep learning offer significant opportunities to transform

moral education (Balta, n.d.; Gocen & Aydemir, 2020). These technologies enable learning experiences that are more adaptive, personalized, and profound (Sabagh et al., 2021; Wu et al., 2023). Several studies also demonstrate that the utilization of educational technology including AI-powered adaptive platforms it can enhance learning motivation, student engagement, and conceptual understanding (Ni'amullah & Hasanah, 2025). AI can also provide feedback based on moral scenarios, present simulations of ethical dilemmas, and assess students' reflective processes through rich learning data analytics (Wiedeman & Wang, 2020). These findings align with literature emphasizing the need for ethical and participatory design in implementing AI in education to ensure that technology truly strengthens value-based learning and moral reflection (Mouta et al., 2024).

Although the potential integration of PBL and AI is substantial, research combining both elements in the context of moral education at the elementary level remains limited. Existing studies on AI in national education focus more on general pedagogical implications or bibliometric analyses rather than on practical applications for teaching religious and moral values (Zawacki-richter et al., 2019). Most research on educational technology and PBL still centers on subjects such as science, mathematics, or social studies, leaving a gap in addressing the unique needs of faith- and piety-based education, which requires reflective and contextual approaches (Ariandini et al., 2024; Ariyani & Kristin, 2021). This research gap highlights the importance of conducting a comprehensive needs analysis to understand teacher readiness, student characteristics, school facilities, and socio-religious factors influencing moral education. A needs analysis becomes a critical step before designing a learning model so that the developed innovation is relevant, contextual, and applicable within the elementary school environment.

Based on this gap, this article aims to identify the needs and actual conditions that serve as the foundation for designing a PBL-based moral education model enhanced with deep learning technology. The needs analysis encompasses pedagogical, technological, and socio-religious aspects within the context of elementary schools. Ultimately, this article examines the argument that integrating PBL and AI can offer an effective solution to the low internalization of faith and piety in conventional moral education. The structure of the article includes a theoretical review, needs analysis methods, key findings, and implications for developing an applicable learning model aligned with the goals of Islamic character education

2. Methodology

This study employed a qualitative descriptive approach supported by quantitative data (mixed descriptive). This approach was selected to provide a comprehensive depiction of the needs for developing a moral education model based on Problem-Based Learning (PBL) supported by artificial intelligence (AI) technology at the elementary school level. The analysis focused on teacher readiness, student characteristics, availability of learning media and technology, as well as supporting facilities and infrastructure. The descriptive approach was used because it allows

researchers to portray actual conditions without intervention, thereby producing valid foundations for subsequent model development.

The subjects of this study were fifth-grade students at SDN 8 Sekayu, whose perspectives were used to explore the needs of moral education and their tendencies in using technology in the learning process. Students were selected as the primary respondents because they directly experience the implementation of akhlak learning in the classroom and can provide valuable insights into their learning experiences, difficulties, and expectations regarding instructional models and media. In addition, Islamic education teachers served as key informants regarding instructional practices, challenges in value internalization, and the potential implementation of AI-supported Problem-Based Learning (PBL). Their perspectives were essential for understanding the pedagogical context, including teaching strategies currently used and the limitations encountered in facilitating moral learning. Data collection techniques included questionnaires, interviews, and observations. Questionnaires were distributed to students to obtain quantitative data regarding their learning experiences, perceived difficulties, and needs for innovative learning models and media. Interviews with teachers were conducted to gain deeper insights into instructional practices and the feasibility of implementing PBL supported by AI-based technology. Meanwhile, observations were carried out to examine the availability of learning facilities, technological infrastructure, and the general classroom environment. The details of these techniques are presented in the following table.

Table 1. Data Collection Techniques

No	Technique	Data Source
1	Questionnaire	Teachers and Students
2	Interview	Teacher
3	Observation	School Facilities

The questionnaire data in this needs analysis were examined using quantitative descriptive statistics based on a 1–5 Likert scale. Each response option represented the degree of agreement or perception of respondents toward the statements provided in the questionnaire. The scores obtained from each respondent were first tabulated and summed for every indicator measured in the instrument. Afterward, the total scores were converted into percentages of the maximum possible score to facilitate clearer interpretation of the results. This percentage conversion allowed the researchers to classify the level of need based on predetermined criteria. Through this procedure, the analysis was able to illustrate the overall patterns of students' and teachers' responses. Furthermore, the results provided a descriptive overview of the level of need, readiness, and perceptions regarding current moral education practices. These findings served as an empirical basis for identifying gaps in existing learning approaches. Ultimately, the analysis supported the formulation of recommendations for developing a Problem-Based Learning (PBL) model supported by AI-based learning media in elementary school moral education.

Questionnaire Data Analysis (Percentage-Based Quantitative Analysis)

a. Percentage Calculation

All respondent scores for each item were summed and then converted into percentages using the formula:

$$P\% = \frac{Total\ core\ Obtained}{Total\ Score\ Maximum}\ x\ 100\%$$

Because percentages were used as indicators of need, the following categories were applied:

Table 2. Need Analysis Criteria

Percentage	Category
81% – 100%	Very High / Strongly Needed
61% – 80%	High / Needed
41% – 60%	Moderate / Somewhat Needed
21% – 40%	Low
0% – 20%	Very Low

These categories were used to interpret teacher needs, student readiness, and the conditions of moral education in the school setting.

3. Results and Discussion

Result

This section presents the results of the needs analysis obtained through the distribution of questionnaires to elementary school students regarding the current conditions of moral education learning. The questionnaire instrument was constructed based on three main aspects: students' learning experiences in moral education, the difficulties they encounter, and their needs for more relevant instructional models and media. All statements were measured using a 1–5 Likert scale and converted into percentages to provide a more comprehensive overview of students' response patterns. The results are presented systematically in the form of bar charts for each aspect, enabling readers to easily identify patterns, strengths, and weaknesses in the ongoing moral education practices. These visualizations also serve as an empirical foundation for formulating the urgency of developing a problem-based learning model supported by deep learning technology. Thus, the findings presented here provide a strong basis for designing a more effective, contextual, and student-centered learning model.

The analysis of the learning experience aspect indicates that students have highly positive perceptions of the moral education process. The first indicator, students' liking of the teacher's approach to teaching moral values, obtained the highest percentage at 89.6%, suggesting that the teaching approach is viewed as enjoyable, easy to understand, and capable of creating a conducive learning environment. Furthermore, the indicator measuring students' perception that moral education is enjoyable reached 87.46%. This finding shows that most students feel comfortable

and interested during the lessons, indicating that moral education is not perceived as a burden.The results for the first aspect are presented in Figure 1.

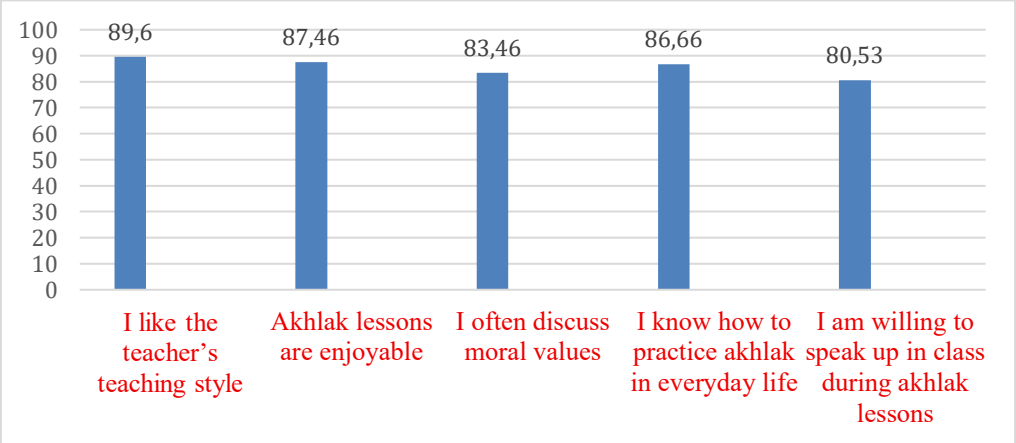

Figure 1. Results of Needs Analysis: Learning Experience Aspect

Interaction and peer discussion during lessons also received positive responses with a percentage of 83.46%, indicating that collaborative activities have begun to develop, although they still require further enhancement. Students' ability to apply moral values in their daily lives was recorded at 86.66%, suggesting that the material delivered by teachers is relatable to their real-life contexts. Meanwhile, the indicator concerning students' confidence to speak in class obtained the lowest score at 80.53%, although it still falls within the "very good" category. This percentage indicates that some students still need support in building confidence and active participation. Overall, the findings on this first aspect show that students' learning experiences in moral education are positive, yet opportunities remain to strengthen discussions and students' confidence in expressing opinions. These results form an important basis for developing a more participatory and contextual learning model in subsequent stages.

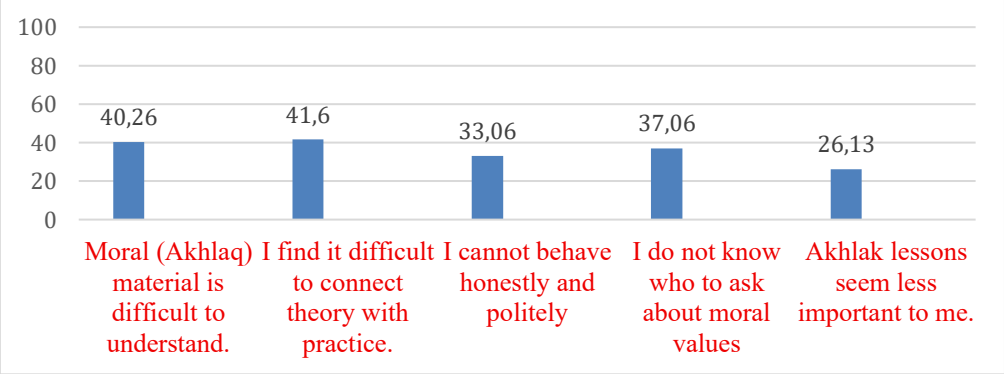

Figure 2. Results of Needs Analysis: Difficulties and Challenges

The needs analysis within the aspect of difficulties reveals that students still face several obstacles in understanding and applying moral values. The first indicator received a percentage of 40.26%, indicating that some students still perceive moral content as abstract and in need of more concrete and comprehensible learning

strategies. The second indicator, related to students' confusion in connecting moral lessons with real-life problems in their surroundings, obtained 41.6%, the highest in this aspect. This finding suggests that students have not yet been able to contextualize moral values in everyday situations, indicating the need for a problem-based learning approach or the use of case scenarios to help them grasp the relevance of the content.

The third indicator received 33.06%. Although lower than other indicators, this still reflects challenges in the affective domain, particularly in building consistent moral behavior. This highlights the need for strategies that emphasize direct practice and habituation of moral actions. The fourth indicator, concerning students' uncertainty about whom to ask for help when experiencing difficulties in moral education, obtained 37.06%. This suggests the absence of a clear support mechanism, indicating the need for structured assistance either from teachers or supplementary learning resources. The fifth indicator received the lowest percentage at 26.13%. Although relatively low, this indicates that a portion of students still lack deep understanding of the importance of moral education. This underscores the need for more engaging and relevant delivery of moral content. Overall, the findings for this aspect show that moral education in elementary schools requires strengthened conceptual understanding, real-life relevance, behavioral habituation, and clear access to learning support. These results emphasize the importance of developing a more interactive, contextual, and meaningful moral education model.

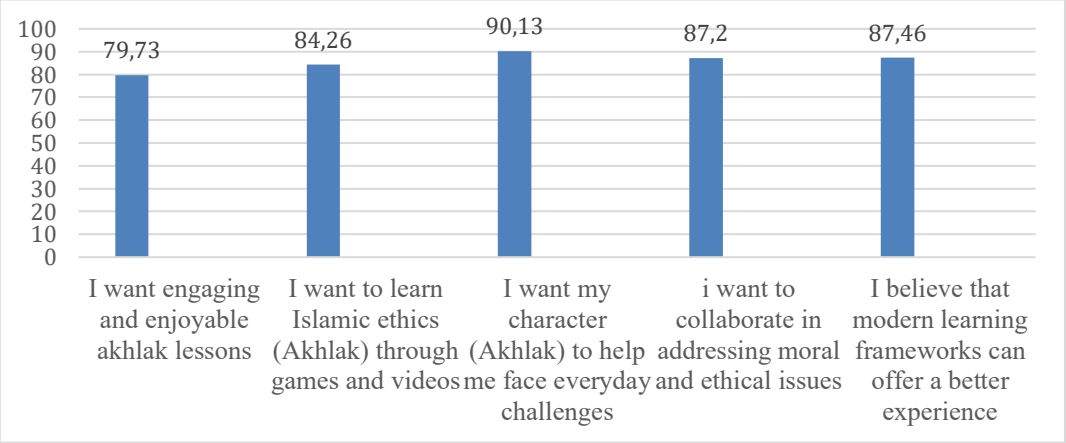

Figure 3. Results of Needs Analysis: Need for New Learning Models and Media

The third aspect reveals significant student needs for innovation in moral education models and media. The first indicator—students' desire for more engaging learning methods—scored 79.73%, indicating a strong preference for more attractive and varied instructional approaches. The second indicator related to the preference for digital media such as videos or games reached 84.26%, demonstrating high interest in interactive learning tools. Moreover, the third indicator, concerning students' desire for more contextual moral lessons, achieved the highest score at 90.13%, suggesting that students expect moral education to be practical and applicable in addressing real issues at school or home. The fourth indicator—students' desire to collaborate in solving problems during lessons—recorded 87.20%, showing strong

support for collaborative learning aligned with the principles of Problem-Based Learning. Lastly, students' belief that new learning models would bring positive change obtained 87.46%, indicating optimistic expectations toward innovative instructional designs. Overall, the findings from this aspect reinforce the need for developing a moral education model that is more engaging, interactive, contextual, and collaborative elements that strongly justify the design of a PBL model enriched with digital or AI-based media. These results provide a clear empirical basis for designing a learning model that emphasizes practical relevance, student engagement, and adaptive media to support moral value internalization.

Table 3. Summary of Needs Analysis Results by Aspect

Aspect	Mean	Category
Learning Experience	85.54%	Very High / Strongly Needed
Difficulties and Challenges	35.62%	Moderate / Somewhat Needed
Need for New Learning Models and Media	85.76%	Very High / Strongly Needed

The summary of the needs analysis across the three main aspects provides a comprehensive picture of students' conditions and needs in moral education. The Learning Experience aspect obtained an average score of 85.54%, categorized as very high, indicating that students have positive and engaging learning experiences that foster active involvement. Conversely, the Difficulties and Challenges aspect obtained an average of 35.62%, categorized as moderate. This suggests that despite positive experiences, students still face obstacles in understanding abstract moral concepts and applying them in real-world contexts. This aligns with earlier findings showing confusion in linking moral lessons with daily problems and a lack of clear avenues for seeking help. Next, the Need for New Learning Models and Media aspect obtained an average of 85.76%, also within the very high category. This demonstrates that students strongly desire innovations in learning models and media, particularly those that are interactive, collaborative, and technology-supported, such as videos, simulations, or educational games.

Based on the need analysis criteria described in the methodology, the percentages obtained in the Learning Experience aspect (85.54%) and the Need for New Learning Models and Media aspect (85.76%) fall into the "very high" category. This indicates a strong empirical justification for developing a more innovative learning model, particularly a Problem-Based Learning (PBL) approach supported by digital or AI-based learning media. Meanwhile, the percentage obtained in the Difficulties and Challenges aspect (35.62%) falls within the moderate category, suggesting that although students generally experience positive learning conditions, they still encounter conceptual and practical difficulties that require pedagogical intervention through more contextual learning strategies.

Overall, the pattern of findings reveals that although students' learning experiences in moral education are positive, they still require support in overcoming conceptual and practical difficulties. Moreover, the high demand for new learning models and media provides a strong empirical foundation for developing innovative approaches such as Problem-Based Learning enriched with digital media or AI-based learning tools. Thus, these results offer an objective basis for designing a more adaptive,

contextual, and effective learning model for internalizing moral values among elementary school students.

Discussion

The findings of this study directly address the research problem, namely that Akhlak (moral) learning at the elementary school level currently requires a reformulation of instructional models and learning media that are more contextual, engaging, and relevant to student characteristics. Empirical data reveal three major findings: students' learning experiences fall into the very high category (85.54%), their difficulties and challenges fall into the moderate category (35.62%), and their need for new learning models and media falls into the very high category (85.76%). These findings were derived from descriptive analyses of validated survey instruments, thereby providing scientifically accountable evidence to support the development of an improved learning model.

The consistent pattern of scores highlights a clear gap between students' learning needs and the type of instruction they currently receive, reinforcing the relevance of developing a more appropriate learning model aligned with the characteristics of today's learners. Interpretation of these findings shows that students possess strong motivation and readiness to engage in richer and more meaningful learning experiences, yet the existing pedagogical facilities do not fully support such processes. This gap can be understood through the lens of constructivism and adaptive learning principles, which emphasize that meaningful learning occurs when students actively construct knowledge through direct interaction, experience, and media that align with their learning styles (El-Sabagh, 2021; Richter et al., 2019). The high scores in learning experience and need for a new model indicate students' desire for such learning environments. This aligns with research demonstrating that adaptive and interactive learning media enhance engagement and comprehension, particularly when the content is abstract (Wu et al., 2023). Thus, the need for new media is not merely a matter of preference, but a rational response to instructional conditions that require technical and pedagogical support to facilitate optimal constructive learning.

Meanwhile, the finding that student difficulties and challenges fall into the moderate category indicates that although students do not experience major obstacles, there are still issues that hinder the fluency of their learning processes. These challenges may relate to a lack of method variation, low relevance of content to real-life contexts, and limited availability of supportive media that improve comprehension. This phenomenon is consistent with Cognitive Load Theory, which states that poorly structured information presentation increases extraneous cognitive load and disrupts conceptual understanding (Paas & Merriënboer4, 2020). This perspective is reinforced by Skulmowski & Xu, (2021), who explains that when digital learning neglects cognitive design principles, students' working memory becomes overloaded, reducing learning effectiveness. Regarding learning media, various studies highlight that the absence of visualization and multimodality makes it difficult for students to process information optimally (Abdulrahaman et al., 2020; Çeken & Taşkın, 2022). Moreover, cognitive overload caused by abstract

content such as moral values can be reduced through the use of videos and appropriate visual presentation strategies (Costley et al., 2021). Additional studies show that poorly guided digital learning design can lead to decreased performance and increased cognitive load across educational contexts (Cabero-almenara et al., 2023).

In the context of moral education in Indonesia, the lack of interactive media has often been reported as a cause of low student engagement, as shown in studies by Trisiana, (2021) and Koten, (2025), which emphasize the importance of technological integration in character education to address issues of relevance. Safitri & Aziz, (2022) further assert that Islamic education and Akhlak learning require innovative media to ensure that moral values are applied contextually rather than remaining at the cognitive level alone. Therefore, lower effectiveness in certain aspects such as students' hesitance to ask questions, difficulty connecting moral concepts to real-world issues, or challenges applying moral values in social contexts can be understood as a consequence of unmanaged cognitive load and limited access to appropriate learning media. Hence, students require a more structured, multimodal, and contextual learning design.

When these findings are connected to established theoretical frameworks, it becomes evident that the results reinforce previous studies emphasizing the importance of learning experiences that relate to everyday contexts. Research has shown that moral education is more effective when students not only receive normative knowledge but also have opportunities to apply values in real social situations through contextual and problem-based learning approaches (Kolibu et al., 2025; Safri et al., 2024). Studies on Problem-Based Learning (PBL) in religious and character education also show that both PBL and project-based models enhance students' ability to think critically and make ethical decisions independently (Wijnia et al., 2024; Triono et al., 2023). The findings of this study strengthen these conclusions by demonstrating that students explicitly express the need for learning that helps them address daily problems at school and at home, suggesting that context-based Akhlak education is not merely a pedagogical recommendation but a real, felt need among learners (Ngangi et al., 2024; Yang, 2024).

More specifically, the empirical data indicate that students strongly expect learning that integrates contextual problem solving, collaborative activities, and interactive digital media. The high percentage in the aspect of need for new learning models and media (85.76%) shows that students prefer learning environments supported by visual and interactive tools such as videos, simulations, or digital learning platforms. At the same time, the high demand for contextual moral learning (90.13%) reflects students' expectations that moral education should help them analyze real-life situations encountered at school or in family environments. These findings provide a concrete basis for integrating Problem-Based Learning with digital or AI-supported media as a strategy to create more meaningful and relevant Akhlak learning experiences. Thus, the development of a moral education model integrating contextualization, direct experience, and problem-solving emerges as an empirically urgent need to enhance value internalization at the elementary school level.

On the other hand, this study also opens opportunities to introduce theoretical modifications in Akhlak education within the digital era. Traditionally, moral learning has been dominated by lecture-based methods and normative content delivery, which according to several studies are insufficient for fostering long-term moral behavior because they do not provide space for students to experience and analyze moral situations directly (Setiawan et al., 2023). This study shows that students who have positive learning experiences demonstrate a higher need for more innovative learning models.

The findings also challenge traditional theories asserting that Akhlak learning can rely solely on teacher exemplification. Although the teacher's role remains essential, the data show that students require more than modeling; they need learning environments rich in experience, relevance, interactivity, and psychological support. Consequently, the traditional modeling approach can be expanded into an Exemplification-Plus Model, which combines teacher role modeling with active learning experiences and the use of educational technology.

In summary, the needs analysis results clearly demonstrate that students' strong demand for contextual learning, collaborative problem solving, and interactive digital media forms the primary empirical basis for designing a Problem-Based Learning model enriched with digital or AI-based technology. By integrating these elements, the proposed learning model is expected to address students' conceptual difficulties, enhance engagement, and facilitate deeper internalization of moral values in everyday life contexts.

4. Conclusion

Based on the needs analysis conducted, it can be concluded that students demonstrate a high demand for *akhlak* (Islamic ethics) learning that is more contextual, interactive, and relevant to their daily lives. Research findings indicate that, until now, *akhlak* instruction has been dominated by lecture-based methods and normative explanations, which make it difficult for students to understand and relate moral values to real-life situations they encounter at school or home.

Students consistently expressed a desire for learning experiences that provide concrete examples, visual aids, and opportunities to discuss and explore moral dilemmas under guidance. Furthermore, the analysis shows that positive learning experiences correlate with an increased need for more innovative learning media and strategies. Students expect learning that not only provides cognitive understanding but also helps them practice these moral values in real social contexts. This reinforces previous research findings emphasizing the importance of a moral learning approach that highlights direct experience, reflection, and active engagement.

Overall, the results of this needs analysis provide a vital foundation for developing *akhlak* learning media that is more engaging, interactive, and contextual. Future research prospects can be directed toward the design and development of digital-

based media capable of presenting authentic moral situations, as well as testing how such media can support the internalization of moral values more effectively.

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