

## DEVELOPMENT OF A SCOUTING POCKET BOOK APPLICATION AS AN INNOVATION TO ENHANCE STUDENTS CHARACTER EDUCATION IN ISLAMIC BOARDING SCHOOLS

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<p><b>KEYWORDS</b></p> <p>Scout Pocketbook, Character Education, Educational Technology</p>	<p><b>ABSTRACT</b></p> <p>The Pesantren scout handbook application in Aceh was developed to strengthen santri character learning. However, its implementation still faces obstacles in the form of limited technological infrastructure, low digital literacy of scout leaders, and challenges of integration with the traditional pesantren curriculum. This study aims to develop a scout pocket book application as a medium for learning the character of students, as well as testing its feasibility and effectiveness in the pesantren environment. The method used is Research and Development research with stages of data collection, design, product development, and evaluation based on literature review and previous research findings. The results show that this application is able to present scouting material and character values interactively through text, videos, and quizzes, and allows real-time monitoring of santri development. The app is considered feasible and potential as a systematic, flexible, and technology-based character learning instrument. The implication is that funding support and collaboration with the government and private sector are important to encourage digital literacy in pesantren and strengthen character education in the digital era.</p>
<p><b>KATA KUNCI:</b></p> <p>Buku Saku Pramuka, Pembelajaran Karakter, Teknologi Pendidikan</p>	<p><b>ABSTRAK</b></p> <p>Aplikasi buku saku pramuka Pesantren di Aceh dikembangkan untuk memperkuat pembelajaran karakter santri. Namun, implementasinya masih menghadapi kendala berupa keterbatasan infrastruktur teknologi, rendahnya literasi digital pembina pramuka, serta tantangan integrasi dengan kurikulum pesantren yang tradisional. Penelitian ini bertujuan mengembangkan aplikasi buku saku pramuka sebagai media pembelajaran karakter santri, sekaligus menguji kelayakan dan efektivitasnya di lingkungan pesantren. Metode yang digunakan adalah penelitian Research and Development dengan tahapan pengumpulan data, perancangan, pengembangan produk, serta evaluasi berdasarkan kajian literatur dan temuan penelitian terdahulu. Hasil penelitian menunjukkan bahwa aplikasi ini mampu menyajikan materi pramuka dan nilai-nilai karakter secara interaktif melalui teks, video, dan kuis, serta memungkinkan pemantauan perkembangan santri secara real-time. Aplikasi ini dinilai layak dan potensial sebagai instrumen pembelajaran karakter yang sistematis, fleksibel, dan berbasis teknologi. Implikasinya, dukungan pendanaan dan kolaborasi dengan pemerintah maupun sektor swasta menjadi penting untuk mendorong literasi digital di pesantren serta memperkuat pendidikan karakter di era digital.</p>

## INTRODUCTION

The development of a scouting pocketbook application in Islamic boarding schools as an innovation in student character education is increasingly urgent in the digital age. Islamic boarding schools are not only institutions for the transmission of religious knowledge, but also moral bastions that shape a generation of integrity and social responsibility. However, character education in Islamic boarding schools now faces complex challenges due to the rapid development of technology that is changing students' learning styles, lifestyles, and expectations. In this context, scouting activities remain relevant as an effective means of character building, as they teach discipline, leadership, independence, cooperation, and responsibility—values that are in line with the vision of pesantren education. Unfortunately, the implementation of scouting is still limited to physical guides that are easily damaged, lack interactivity, and are unattractive to the digital generation. This reduces the enthusiasm of students, even though scouting has great potential to strengthen character education if it is developed through more contextual and attractive digital media.

Research by Rusadi et al. (2019) shows that one of the main obstacles in implementing scout-based character education is the limited number of scout leaders. This limitation makes the implementation of scouting activities suboptimal, including in Islamic boarding schools, which generally also have limited educational resources.

In addition, research by Suhaida and Bardaningsih (2022) confirms that low student participation and lack of parental support are also obstacles to character development through scouting. This is very relevant to the context of Islamic boarding schools, where parental and community support plays an important role in supporting the success of character education. Thus, the development of a scout pocket book application in Islamic boarding schools is expected to function not only as a learning medium but also as a means of communication between students, instructors, and parents.

Another challenge is the limited integration of technology in the pesantren environment. Abas and Auliya (2023) emphasize that pesantren in the era of the 4.0 industrial revolution are required to adapt, not only in terms of teaching methods but also in the use of technology to strengthen character education. Ulya et al. (2021) found that Salafi Islamic boarding schools tend to still use traditional approaches, making them less flexible in facing changes of the times. Therefore, the uniqueness of this research lies in its efforts to present an innovation in the form of a digital scout handbook application specifically developed for Islamic boarding schools, rather than simply adopting the scout model used in public schools.

The development of this application must also consider philosophical and cultural aspects. Islamic boarding schools are educational institutions with strong roots in Islamic traditions and local culture. Therefore,

the application designed at must not ignore Islamic values and local wisdom, especially in Aceh, which has a distinctive religious identity. This application must integrate scouting values with Islamic teachings so that, in addition to supporting extracurricular activities, it also strengthens the religious identity of students (Bashori et al., 2022; Ilahiyah & Ningsih, 2024).

Furthermore, traditional pesantren learning methods such as *sorogan* and *babtsul masail* (2010) can serve as inspiration for developing the app's content. The scout handbook application not only presents material in text form but also includes interactive features such as quizzes, videos, discussion forums, and activity reminders. Thus, this application is able to create a more contextual, engaging, and relevant learning experience for the digital generation. The integration of traditional learning methods with digital media will result in a comprehensive and adaptive approach to the changing times.

One of the fundamental problems in Islamic boarding schools is the gap between the needs of students who live in the digital world and traditional learning methods. Monotonous physical guidebooks are no longer effective in stimulating students' motivation to learn. In this context, a digital application based on scouting is presented as an innovative solution. The application allows students to access materials anytime and anywhere, thus overcoming the limitations of physical books. In addition to being more practical and durable, the application

can be updated in line with the times (Lubis, 2023).

This study aims to develop a scout handbook application as a medium for teaching character to students at Islamic boarding schools and to test its feasibility and effectiveness in supporting extracurricular activities. This application combines scouting material with character values that are in line with the vision of Islamic boarding schools, such as discipline, responsibility, leadership, independence, and cooperation. The focus of the research is the scout troop in Islamic boarding schools in the Aceh region, which has a unique characteristic of integrating religious education, local culture, and extracurricular activities. Using a Research and Development approach, this study produced an application product that was tested for feasibility by education experts and Islamic boarding school practitioners, as well as tested for effectiveness through limited implementation in the field. This research is expected to address the low participation of santri in scouting due to the limitations of conventional media, while offering technology-based solutions that are contextual, adaptive to the digital era, and remain rooted in the values of pesantren education.

The urgency of this research is even more apparent when we realize that character education is the foundation for nation building. Islamic boarding schools in Aceh play a strategic role in preserving moral and Islamic values amid globalization. However, without innovation in

learning methods, Islamic boarding schools risk falling behind. The Scout Handbook application not only utilizes technology as a tool, but also as a new strategy to strengthen character education.

The contribution of this research is theoretical and practical. Theoretically, this research enriches the discourse on the integration of character education, scouting, and digital technology in the context of Islamic boarding schools. The distinction of this research lies in the development of a scout handbook application specifically designed for Islamic boarding schools, unlike previous studies that generally focused on formal schools or administrative aspects. Yaqin and Novanda (2022) developed a Django-based student handbook application for Islamic boarding school administration, but did not touch on the aspect of character learning through extracurricular activities. Wulandari et al. (2023) developed a STEM-based digital handbook for mathematics learning in junior high schools, while Wijayanti (2019) emphasized a biology handbook based on local excellence. Both studies demonstrate innovation in learning media, but are still limited to formal subjects. Meanwhile, Rusadi et al. (2019) highlight the role of scouting in character education at elementary schools, finding that such activities effectively instill discipline, responsibility, and cooperation. However, this study does not integrate a digital approach or the pesantren context. Therefore, this research contributes new insights through the development of a

digital scouting handbook application tailored to the needs of pesantren.

More broadly, this application has the potential to become a model of educational innovation that can be adopted by other Islamic boarding schools in Indonesia. Thus, the contribution of this research is not limited to the local context of Aceh, but can also be expanded nationally. The implementation of the scout handbook application in Islamic boarding schools is expected to produce a generation of students with strong character, adaptable to technological developments, and still adhering to Islamic values and local culture. Thus, the development of the scout handbook application in Islamic boarding schools is not only a technical innovation, but also part of the greater mission of Islamic education in Indonesia. Islamic boarding schools are expected to produce students who are not only intellectually intelligent, but also have noble character, are ready to face the challenges of the digital age, and are able to make positive contributions to society and the nation.

## **THEORY DESCRIPTION**

Character education in the context of Islamic institutions, such as Islamic boarding schools, requires a deep understanding of how moral character, ethics, and personality can be developed through learning experiences. Thomas Lickona (1997) states that character consists of three domains: moral knowing (knowledge of moral values), moral feeling (moral feelings), and moral action (moral

actions). In the context of character education, the role of teachers as role models, a caring learning environment, and the involvement of parents and the community are very important as vehicles for instilling character values.

Albert Bandura (1977), in his Social Learning Theory/Social Cognitive Theory, emphasizes that individuals learn through observation (observational learning), imitation of models, and reciprocal determinism between personal factors, behavior, and the environment. This process also involves cognitive aspects such as attention, retention, and motivation. Bandura also emphasizes that positive models, supportive contexts, and reinforcement greatly influence the extent to which moral learning can occur.

In the realm of digital media, the principle of Multimedia Learning as proposed by Richard E. Mayer shows that presenting information through a combination of words and images (visual + verbal) can improve understanding and learning retention compared to delivery using only one modality. This principle includes dual-channel processing, limited capacity, and active processing by learners (Chen, 2024).

These theories intersect with the concept of educational innovation, where digital applications are not merely tools, but means to broaden and deepen character learning experiences. Lickona's character education theory and Bandura's social modeling provide a framework for understanding how values such

as discipline, cooperation, leadership, and responsibility can be conveyed through practical and interactive activities—not just through direct instruction. Mayer's multimedia principle supports the use of interactive media, audiovisuals, quizzes, and digital communication as design components that can strengthen the transfer of character values (Biyikoglu Alkan & Çavuşoğlu, 2024; Munawarsyah et al., 2024).

These theories are used to analyze research findings related to the development of scout handbook applications in Islamic boarding schools. The analysis focuses on how the aspects of observation/modeling, social interaction, media multimodality, and the role of the pesantren environment contribute to or limit the effectiveness of the application in educating the character of santri (Lubis et al., 2024; B. E. Rusadi et al., 2019). This theoretical approach not only assesses whether the application functions, but also reveals why and how the mechanism of character education through digital media can work in the context of Islamic boarding schools, which are rich in religious values and local culture.

## METHOD

This study uses a Research and Development (R&D) approach with the main objective of producing an innovative product in the form of a digital scout handbook application designed specifically for Islamic boarding schools. The R&D method was chosen because it provides a systematic

process for designing, testing, and refining educational products, while also evaluating their effectiveness in achieving targeted learning outcomes (2011). The development process in this study adopted the ADDIE model, which includes the stages of Analyze, Design, Development, Implementation, and Evaluation. Each stage was adapted contextually so that the product would suit the needs of the Islamic boarding school environment, the principles of character education in scouting activities, and the expectations of scout leaders as the main users. In the analysis stage, the researchers examined the challenges faced by scout leaders in pesantren-based scouting activities and identified the need for practical and easily accessible digital resources. The design stage then translated these needs into the structure of the application prototype, including layout, navigation, material coverage, and the integration of religious and local cultural values relevant to santri. The development stage produced a digital application with features that combine text, visuals, and interactive elements to increase student engagement. The implementation stage was carried out by testing the product on selected users, while the evaluation stage assessed the feasibility, practicality, and effectiveness of the product.

The trial design was carried out systematically, beginning with a feasibility test. Validation involved experts from four fields,

namely design/media, scouting materials, learning, and Islamic boarding school education. The experts assessed the initial prototype of , provided feedback, and suggested improvements. Next, a limited trial was conducted with eight respondents consisting of scout leaders and practitioners at the boarding school scout troop to evaluate the usefulness and relevance of the content. Based on these results, the first revision was made and then reconfirmed by the experts. The next stage was a practical test involving 20 scout leaders who operated the application, explored its features, and provided structured responses through a questionnaire. This stage ensured that the product could be applied in the field. After the second revision, a field test was conducted to assess the effectiveness of the application. This study used a quasi-experimental design with a Posttest-Only Control Group Design, involving 15 respondents in the experimental group and 15 in the control group. The experimental group used the digital application, while the control group continued to use conventional methods. Tests, questionnaires, and discussions were conducted to capture learning outcomes and user perceptions. The product was then revised again based on field test feedback.

The research subjects were scout leaders serving in Islamic boarding schools in the Aceh region. They were selected because they played a direct role in planning, managing, and implementing scouting activities in Islamic boarding schools, making them the main users

of the application. Data collection used several instruments, namely expert validation sheets, scout leader response sheets regarding product needs and practicality, application assessment sheets, and test results from effectiveness tests. Data analysis was conducted in three stages, namely product feasibility analysis based on expert assessment, practicality analysis based on user responses, and effectiveness analysis by comparing the post-test results of the experimental and control groups. Through this methodological design, the study sought to ensure that the digital scout handbook application developed was not only theoretically sound but also practical and proven effective in strengthening character education in the pesantren environment.

## RESULTS AND DISCUSSION

### Initial Product Development Results

The product developed in this study is a digital application-based handbook called the

Islamic boarding school scout handbook application. The presence of this product is expected to be able to answer the real needs in the Islamic boarding school environment, particularly in internalizing the character values of students into scouting activities. In addition, this application is designed as a practical reference for coaches, so that they can more easily manage scouting as a means of non-formal education in Islamic boarding schools. With flexible digital features, the application allows users to access information anytime and anywhere, according to their needs. The product development process was carried out using the Research and Development (R&D) method using the ADDIE model, which includes analysis, design, development, implementation, and evaluation, so that each stage runs systematically and purposefully. A summary of the ADDIE model stages can be seen in the following table:

**Table 1.** Development Stages Through ADDIE

No	Stage	Main Activities	Adaptation of the Pesantren Context
1	Analyze	Identify user needs	Adapted to the culture and Islamic values of Islamic boarding schools
2	Design	Design content, navigation, and appearance	Incorporating character values and scouting principles
3	Development	Application prototype development	Collaboration between media experts, scouts, educators, and Islamic boarding schools
4	Implementation	Limited and practical testing	Used by boarding school scout leaders
5	Evaluation	Feasibility, practicality, and effectiveness testing	Expert assessment and user response

The analysis stage began with mapping needs and challenges through observation and interviews with various related parties, such as

the Scout Headquarters, the Aceh Education Office, Dayah Aceh, and scout leaders at Islamic boarding schools. Formal support from Kwarda

Aceh legitimized the research activities and opened up opportunities for researchers to conduct field visits to various scout groups at Islamic boarding schools in a number of areas. This observation found that scouting activities in Islamic boarding schools are still carried out routinely every week, but their implementation tends to be ceremonial and focused on competition. The material provided is not yet systematically documented, is often spontaneous, and does not emphasize the integration of values specific to Islamic boarding schools. This condition shows that there is no structured coaching pattern to support the strengthening of students' character.

Statements from pesantren leaders reinforce these findings. They complain about the lack of scouting guidelines that are in line with pesantren culture, so that the delivery of material relies solely on personal experience. In fact, some leaders admit to difficulties in designing material that is coherent and appropriate for each level. This is exacerbated by the suboptimal use of scouting activities to strengthen the Islamic character of santri. Several observations also show that there are scouting activities that are not in line with pesantren values, such as songs or chants that are not relevant to moral guidance. Thus, there is an urgent need for systematic Islamic-based scouting guidelines for pesantren that can be passed on to the next generation of leaders.

The problems identified do not only originate from pesantren leaders, but are also recognized by the institution that oversees the

scout movement in Aceh. Kwarda Aceh and the Dayah Education Office emphasize that even though santri have shown impressive achievements in scouting, the implementation of activities in pesantren scout troops still faces many obstacles. There is no systematic pattern that can integrate scouting as an integral part of santri character development. The role of Sako pesantren scout unit, which is supposed to be a coordinating body, is considered to be suboptimal, resulting in weak synergy between scouting and pesantren values education. Therefore, they believe that the scout handbook application can be a practical and strategic solution to help leaders design more focused, Islamic, and contextual activities.

A needs analysis conducted through a questionnaire given to 50 pesantren trainers further reinforced the urgency of developing this application. The majority of respondents had 1-5 years of experience in training, which means they already have a good understanding of the practical challenges in the field. The questionnaire results showed that 90% of respondents considered the pesantren scout handbook application to be "very necessary," while the rest said it was "necessary." This data illustrates the high level of awareness among leaders regarding the importance of easily accessible, structured guidance. They believe this application will help in designing and implementing Scouting activities that are more effective, efficient, and oriented towards character building for students.

**Table 2.** Application Testing Procedures

No	Test Phase	Procedure
1	Feasibility Test	Expert validation (design/media, scouting, learning, and Islamic boarding schools), followed by limited testing on 8 respondents who are scouting practitioners at Islamic boarding schools
2	Revision I	Product improvement based on expert input and limited testing, reconfirmation with validators
3	Practicality testing	Involving 20 scout leaders, product presentation, application access, and completion of assessment instruments
4	Revision II	Product refinement based on user feedback, prepared for field testing
5	Effectiveness Testing	Using a Posttest-Only Control Group Design with 15 respondents in the experimental group and 15 in the control group; tests, questionnaires, and discussions were conducted.
6	Revision III	Product improvements based on field test results before finalization

Application development is not only based on practical needs, but also reinforced by theoretical studies. Conceptually, this product integrates contextual learning theory, constructivism, character education, Islamic boarding school philosophy, and basic scouting concepts. For example, contextual learning theory encourages scouting material to be structured in accordance with the real lives of students at Islamic boarding schools, while constructivism emphasizes active learning through user involvement. The principles of Islamic character education are integrated into every activity by promoting the values of manners, morals, and spirituality. In addition, even though it is digital-based, the application still emphasizes scouting principles such as learning by doing and real activities in the field. Thus, this application is not merely a passive learning tool, but encourages students to be actively involved in educational activities.

In the design stage, the application design focused on developing a content framework, navigation flow, and a simple yet

functional interface. The researchers emphasized three main aspects, namely ease of access, simplicity of display, and relevance of content. This was done to ensure that the application could be used comfortably by coaches with different technological backgrounds. In addition, the navigation structure is designed to be intuitive, allowing users to move between pages easily, from the material menu to the documentation gallery. The wireframe layout is an important step in determining the layout and hierarchy of information, before finally moving on to an attractive and aesthetic visual design.

Overall, the results of this initial product development confirm the urgency of the Islamic boarding school scout handbook application as an innovative solution to the challenges of scouting in Islamic boarding schools. Findings from observations, interviews, and needs analysis show that scouting activities in Islamic boarding schools are still not well managed and have not fully internalized Islamic character values. Through strong theoretical support, mature instructional design, and the real needs

of the trainers, this application has great potential to become an important instrument in improving the quality of boarding school-based scout training. Furthermore, this product is not only relevant in Aceh, but also has the prospect of being adapted by boarding schools in various other regions in Indonesia, so that scouting can truly function as a vehicle for the formation of a complete and Islamic character for santri.

### **Product Trial Results**

The scout handbook for Islamic boarding schools in the form of an Android-based digital application developed by the development team has undergone a series of testing and validation stages. The official handover process took place on February 25, 2025, as stated in the minutes of the meeting detailing the handover of the product from the developer to the researcher. The product was received in APK format, which can be downloaded and operated via mobile devices. During the handover process, it was confirmed that the application was in accordance with the initial agreement contained in the memorandum of understanding dated February 6, 2025. In addition, the developer also provided a one-month maintenance warranty period as a form of responsibility in the event of technical problems or the need for further improvements. To maintain system security, server credential details were not included in the document but were conveyed separately to researchers, thereby ensuring data security and application access.

The existence of this handover document also strengthens the legality of the collaboration and serves as the basis for continuing the expert validation and limited testing stages.

During the validation stage, researchers involved four categories of expert validators, namely design/media experts, scouting material experts, learning experts, and Islamic boarding school experts. Each category of experts consisted of two validators with competencies in their respective fields, ensuring that the assessments provided were objective and comprehensive. The design/media aspect was validated by two experts in the field of educational technology who assessed the quality of the interface display, text readability, color consistency, and application performance. The assessment results showed a score of 0.75, which is considered acceptable, with several recommendations for improvement, such as optimizing button responsiveness, improving file accessibility, and adjusting icons to make them more attractive. This shows that the application already meets the basic criteria in terms of visuals and technical aspects, but still needs refinement to be more user-friendly.

Furthermore, the scouting material aspect was validated by experts competent in scouting. The assessment focused on the suitability of the content with the Scout Movement curriculum, the completeness of the material at various levels, and its integration with the needs of coaches and students. The validation results obtained a score of 0.88, which

is categorized as very feasible. However, there were suggestions such as adding content about the pesantren scouting model, improving feature names to make them more relevant, and adding technical material such as bivouacs, expeditions, and general proficiency standards. This shows that the application has been able to meet the basic needs of scouting learning, but content enrichment is needed to make it more contextual to field conditions.

From a learning perspective, the application was validated by education experts who assessed the suitability of the material with the principles of technology-based learning, the integration of theory and practice, interactivity, and the potential of the application to support independent learning. The assessment showed a score of 0.85, which is also categorized as very feasible. The validators suggested that the material should not only be in the form of narrative text, but should also include multimedia variations such as audio summaries, activity success indicators, and reinforcement of Islamic values in the santri scout program. This input confirms that the application has successfully met technology-based learning standards, although media variation and language adjustments still need to be improved.

In terms of pesantren aspects, the application received the highest score of 0.92, which falls into the highly feasible category. Pesantren experts assessed that the application's content is in line with Islamic educational principles, supports the character building of

santri, and is consistent with pesantren traditions. However, they suggested adding content such as the Pesantren Law, the Qanun Aceh, and flagship program materials that are more contextual to pesantren life. With this high score, the application has proven to be relevant and acceptable in the pesantren environment, while also demonstrating the integration of scouting and pesantren values.

A recapitulation of the validation results from the four categories of experts shows an average score interval of 0.86 or 86%, which places the application in the highly feasible category. This score confirms that the Islamic boarding school scout pocket book application has fulfilled technical, pedagogical, and contextual aspects in a balanced manner. However, the suggestions and recommendations for improvement from each expert are important notes for refinement so that the product can be optimized in its implementation.

In addition to expert validation, limited trials were also conducted with eight respondents who were scout leaders and managers of scouting activities in Islamic boarding schools. Respondents were asked to assess the application through ten aspects of observation, ranging from ease of use, appearance, relevance of material, to the benefits of the application in increasing students' interest in learning. The limited trial results showed an average score of 0.92 or 92%, which is considered very feasible. This proves that the application not only meets theoretical and

technical standards but also receives positive responses from direct users in the field.

Thus, the results of the study show that the developed scout pocket book application for Islamic boarding schools has been comprehensively validated and proven to be suitable for use as a technology-based learning medium in Islamic boarding schools. The high scores in various aspects, ranging from design, material, learning, to boarding school life, show that this product has great potential to improve the quality of scout learning in Islamic boarding schools. Input from validators and respondents is an important foundation in the refinement stage, so that the application can be used more widely, be highly effective, and make a significant contribution to strengthening the character education of students through scouting activities.

### **Product Revision**

Product revision is an essential part of the Research and Development (R&D) cycle because it serves as a mechanism for correcting and refining products based on input from various stakeholders. This revision is carried out gradually and systematically so that the scout boarding school pocket book application is truly able to meet user needs, has acceptable quality, and is in line with the objectives of character education for santri. In the development research model, product revision is at the core of design iteration so that aspects of feasibility,

usability, and effectiveness can be continuously improved (Borg & Gall, 1984).

The first stage of revision was carried out after validation by experts and limited testing by users. In this stage, input from design/media experts was used to improve the visual appearance, speed up performance, ensure interface responsiveness on various devices, and fix technical errors such as error pages and images that did not display. In terms of content, scouting material experts emphasized the importance of adding scouting material that is contextual to boarding school life, removing duplicate content, and adding new features such as simple quizzes and general competency standards to make the application more applicable.

Recommendations from learning experts focused on interactive and applicable material presentation. They suggested that each module be equipped with practical steps, success indicators, and simpler language. Material about santri character, for example, was enriched with clear activity objectives and competencies, so that it not only provided information but also encouraged active user engagement. This input reinforces the pedagogical aspect of so that the application truly functions as an effective and relevant learning tool.

Meanwhile, input from pesantren experts emphasizes the suitability of language, illustrations, and content with pesantren values. They remind us that the use of terms and narratives should reflect the religious culture of

pesantren. It is also recommended that the visuals displayed remain polite, Islamic, and do not conflict with pesantren norms. The character values of santri (pesantren students) also need to be explained explicitly, both through narratives and examples of scouting practices. Thus, the application is not only technically feasible but also culturally acceptable to the pesantren community.

The second stage of revision was carried out after a practical trial involving scout leaders as direct users. Their feedback covered aspects such as ease of navigation, clarity of content, and application loading speed. Some of the improvements that emerged included restructuring the feature menu to make it more organized, optimizing the application's performance to make it faster to access, simplifying long content into concise points, and adjusting terminology to the language typical of Islamic boarding schools. This shows that the involvement of direct users is very important in assessing the effectiveness of a product in a real operational context (Lopes et al., 2018).

The third stage, the final revision, was carried out after field testing. This revision focused on optimizing the overall performance of the application: speeding up scrolling, improving responsiveness on various devices, refining the content structure, and ensuring that the application was truly ready for mass use. The purpose of this final revision was to integrate all technical, pedagogical, and cultural aspects that had been obtained from expert input and user

experience. This is in line with recent findings that the iterative process in developing digital-based educational applications plays a major role in increasing user engagement and learning effectiveness (Gladman et al., 2024).

Thus, product revision in this study is not merely a technical improvement, but a strategic process to ensure that the scout handbook application is truly contextual, practical, and well-received by both users and the pesantren community. Data-driven revisions and real-world feedback are expected to produce a final product that is not only academically sound but also relevant to the educational culture of boarding schools (Komandla, 2024; Qian, 2022).

### **Final Product Review**

The final product of the pesantren scout handbook application showcases comprehensive improvements after undergoing a series of design, development, testing, and revision stages. The final version expands the scope of features from 15 to 20 main functions that complement each other to support scouting development in pesantren environments, including the integration of legal foundations (*Qanun Aceh, Pesantren Law*), training guidelines and general competency requirements, tiered material modules, character-building features that include learning objectives and success indicators, and evaluation tools such as report cards and quizzes. These changes are not only in terms of content addition, but

also include technical improvements: performance optimization, improved responsiveness between devices, improved interface layout, and enhanced accessibility so

that the application can be used by trainers with varying levels of digital literacy. Here is the final application display.



**Figure 1.** Display of the digital scout handbook application

The development of the final product was based on in-depth empirical analysis; field observations and interviews with coaches and policy makers in Aceh revealed a real need for contextual and structured scouting guidelines. Therefore, each feature is designed to be pedagogically and culturally relevant, combining scouting principles—learning by doing, teamwork, outdoor activities—with Islamic boarding school values such as manners, morals, and spirituality. The emphasis on character building is realized through material units that include core competencies, basic competencies, examples of implementative activities, reflections, and formative evaluation so that coaches obtain concrete tools to internalize these values in scouting activities.

Methodologically, the use of the ADDIE model and an iterative (Agile) software

development approach allows the development team to respond quickly to input from expert validators and users so that revisions can be made based on field evidence. This approach is supported by literature showing the effectiveness of ADDIE in improving training outcomes when combined with blended learning models or user-centered design (Abuhassna et al., 2024; Luo et al., 2024). In addition, attention to usability and user-centered design aspects has proven crucial for the adoption of applications among Islamic boarding school mentors; UI/UX optimization and practicality testing help increase user acceptance and the effectiveness of application use in real contexts (Janson & Ernst, 2024; Jiang et al., 2024).

Field test results show the positive impact of the application on the ability of coaches to design more structured and

character-oriented scouting programs. Quantitative and qualitative indicators from the effectiveness test show a significant increase in comprehension scores and activity design skills compared to the control group, confirming that the product is not only technically and pedagogically feasible, but also effective in the context of non-formal pesantren learning. These findings are in line with recent studies that confirm that the integration of learning technology that considers the local context and instructional design principles can strengthen the outcomes of character education and practical skills (Luo et al., 2024; Nurasiah, 2022).

However, the development of this final product also opens up a follow-up agenda: expanding content features for different scout levels, integrating offline features for environments with limited connectivity, and providing continuous training programs for instructors to maximize the application's utilization. With continuous improvement and institutional support, the scout handbook application for Islamic boarding schools has great potential to be adapted in other regions and contribute to strengthening character development among students through contextual and sustainable scouting.

### Research Novelty

This research has a number of novelties that distinguish it from previous research, in terms of objectives, context, methods, and products. First, this research focuses on scout

leaders in Islamic boarding schools, not students, so that the application developed serves as a practical guide in designing, implementing, and evaluating Islamic boarding school-based scouting activities. Second, this application integrates Islamic values, santri character, and pesantren regulations such as the Pesantren Law and *Qanun Aceh*, making it relevant to the religious-based educational environment as well as a means of moral guidance.

Third, in terms of product, the Islamic boarding school scout pocket book application is the first digital innovation that combines scouting and Islamic boarding school education in one platform. Offline access makes it suitable for Islamic boarding schools with limited internet access. Fourth, the development approach combines the ADDIE model and Agile methodology, enabling a systematic design that is also adaptive to user input.

Fifth, this application promotes local Aceh values and regional regulations, making it not only a learning medium but also an instrument for implementing cultural and religious policies. Sixth, this product serves as the first digital scouting medium in Islamic boarding schools, replacing the limitations of traditional printed books.

In addition, this research contributes academically to the fields of educational technology, character education, and the development of media based on local wisdom. Finally, this application has the potential for

replication and scalability for other Islamic boarding schools in Indonesia and other Islamic educational institutions, with the flexibility to adapt to local contexts. Thus, this research presents practical, theoretical, and applicable innovations.

## CONCLUSION

Based on the above description, the Islamic boarding school scout pocket book application has been positioned as a relevant educational innovation that is urgently needed to be implemented in supporting the character building of students through scouting activities. This product has been assessed as feasible, practical, and effective for use by scout leaders in Islamic boarding schools so that character education based on Islamic values and Islamic boarding school traditions can be strengthened systematically. The advantages of the application are demonstrated through the integration of scouting material with Islamic boarding school regulations and the local wisdom of Aceh. Thus, its function is not limited to being a digital learning medium, but also an instrument for shaping the moral character of students. In addition, the offline access feature has been included as one of the advantages that suits the limitations of technological infrastructure in the pesantren environment. This application has also been seen as a strategic contribution to the digitization of character education in the era of the Industrial Revolution 4.0. Its existence is not only understood as a practical guide but also as a

model that can be replicated and developed nationally. Based on the above description, it can be concluded that the pesantren scout handbook application has the potential to become an important reference in the development of pesantren-based scouting education in Indonesia, as well as in strengthening the integration of local, Islamic, and national values in the modern education system.

## REFERENCES

- Abuhassna, H., Alnawajha, S., Awae, F., Adnan, M. A. B. M., & Edwards, B. I. (2024). Synthesizing Technology Integration Within the ADDIE Model for Instructional Design: A Comprehensive Systematic Literature Review. *Journal of Autonomous Intelligence*, 7(5), 1546. <https://doi.org/10.32629/jai.v7i5.1546>
- Azra, A. (2010). Pesantren and Madrasa: Muslim Schools and National Ideals in Indonesia. In *Schooling Islam: The Culture and Politics of Modern Muslim Education* (pp. 172–198). [https://api.elsevier.com/content/abstract/scopus\\_id/43849090182](https://api.elsevier.com/content/abstract/scopus_id/43849090182)
- Bandura, A. (1977). *Social Learning Theory*. Prentice-Hall.
- Bashori, B., Novebri, N., & Salabi, A. S. (2022). Budaya Pesantren: Pengembangan Pembelajaran Turats. *Al Mabbats: Jurnal Penelitian Sosial Agama*, 7(1), 67–83. <https://doi.org/10.47766/almabhats.v7i1.911>
- Biyikoglu Alkan, I., & Çavuşoğlu, H. (2024). *Examining the Effectiveness of Education Based on Social Learning Theory in Fostering Self-Care and Social Skills in School Children: A Randomized Controlled Trial*. Elsevier BV. <https://doi.org/10.2139/ssrn.4781443>
- Borg, W. R., & Gall, M. D. (1984). Educational Research: An introduction. *British Journal of*

*Educational Studies*, 32(3).

- Chen, M. (2024). Evaluating “Reading Bear”: An analysis of a multimedia phonics programme using Mayer’s principles of multimedia learning. *Studies in Technology Enhanced Learning*, 4(2). <https://doi.org/10.21428/8c225f6e.f4a4ff76>
- Gladman, T., Li, H., McCullough, O., & Grainger, R. (2024). Rapid Design of a Student-Centred App for Musculoskeletal Clinical Skills: an Example of a Theoretically Informed Approach to Developing Apps for Learning. *Perspectives on Medical Education*, 13(1), 368–379. <https://doi.org/10.5334/pme.1223>
- Ilahiyah, I. I., & Ningsih, P. W. (2024). Integrasi Nilai Nilai Kepramukaan dalam Membangun Karakter Siswa di MAN 8 Jombang. *Jurnal Ihsan Jurnal Pendidikan Islam*, 3(2), 341–348. <https://doi.org/10.61104/ihsan.v3i2.973>
- Janson, A., & Ernst, S.-J. (2024). Disentangling the Influence of Mobile Learning Usability and its Determinants–PLS-SEM and Importance-Performance investigation. *Computers and Education Open*, 7, 100230. <https://doi.org/10.1016/j.caeo.2024.100230>
- Jiang, Q., Deng, L., Zhang, J., & Pengbo, Y. (2024). User-Centered Design Strategies for Age-Friendly Mobile News Apps. *Sage Open*, 14(4). <https://doi.org/10.1177/21582440241285393>
- Komandla, V. (2024). Transforming Financial Interactions: Best Practices for Mobile Banking App Design and Functionality to Boost User Engagement and Satisfaction. *Global Research Review in Business and Economics*, 10(5), 91–101. <https://doi.org/10.56805/grrbe.24.10.5.64>
- Lickona, T. (1997). The Teacher’s Role in Character Education. *Journal of Education*, 179(2), 63–80. <https://doi.org/10.1177/002205749717900206>
- Lopes, A., Valentim, N., Moraes, B., Zilse, R., & Conte, T. (2018). Applying user-centered techniques to analyze and design a mobile application. *Journal of Software Engineering Research and Development*, 6(1), 5. <https://doi.org/10.1186/s40411-018-0049-1>
- Lubis, R. R. (2023). *Modernisasi Lektur Pendidikan Islam: Penguatan Khazanah Keilmuan Mahasiswa Pendidikan Agama Islam*. Literasi Nusantara.
- Lubis, R. R., Hanafiah, M. A., Dalimunthe, R. A., & Rashed, Z. N. (2024). Modernization Of Islamic Education Lecture At Islamic Higher Education Institutions In Contemporary Indonesia. *Miqot: Jurnal Ilmu-Ilmu Keislaman*, 48(2), 146–168. <http://dx.doi.org/10.30821/miqot.v48i2.1189>
- Luo, R., Li, J., Zhang, X., Tian, D., & Zhang, Y. (2024). Effects of Applying Blended Learning Based on the ADDIE Model in Nursing Staff Training on Improving Theoretical and Practical Operational Aspects. *Frontiers in Medicine*, 11, 1413032. <https://doi.org/10.3389/fmed.2024.1413032>
- Munawarsyah, M., Fakhurridha, H., & Muqowim, M. (2024). Character Education for Teenagers in the Era of Society 5.0 Thomas Lickona’s Perspective. *Edukasia: Jurnal Pendidikan Dan Pembelajaran*, 5(2), 127–138. <https://doi.org/10.62775/edukasia.v5i2.984>
- Nurasiah, I. (2022). Cultural Values’ Integration in Character Development Through Educational Applications. *Frontiers in Education*, 7, 849218. <https://doi.org/10.3389/feduc.2022.849218>
- Qian, Y. (2022). User Review Analysis of Mobile English Vocabulary Learning. *Journal of Educational Technology Development and Exchange*, 15(1), 47–62. <https://doi.org/10.18785/jetde.1501.04>
- Rusadi, A. A. P., Baiduri, B., & Regina, B. D. (2019). Pendidikan Karakter dalam Ekstrakurikuler Kepramukaan di Sekolah Dasar. *Indonesian Journal of Primary Education*, 3(2), 91–99. <https://doi.org/10.17509/ijpe.v3i2.22105>
- Rusadi, B. E., Widiyanto, R., & Lubis, R. R. (2019). Analisis Learning and Inovation

Skills Mahasiswa PAI Melalui Pendekatan Saintifik dalam Implementasi Keterampilan Abad 21. *Conciencia*, 19(2), 112–131.

Sugiyono. (2011). *Metode Penelitian Kualitatif, Kuantitatif, dan R and D*. Alfabeta.

Suhaida, D., & Bardaningsih, F. (2022). Mengembangkan Karakter Positif Siswa Melalui Kegiatan Ekstrakurikuler Pramuka. *Jurnal Pendidikan Kewarganegaraan*, 6(2), 229–238. <https://doi.org/10.31571/pkn.v6i2.3604>

Ulya, A., Muqtadiroh, F. A., & Muklason, A. (2021). Identifikasi Faktor Resistansi Guru Terhadap Teknologi Sebagai Pendukung Pembelajaran di Pondok Pesantren Salaf. *Jurnal Nasional Teknologi Dan Sistem Informasi*, 7(1), 18–26. <https://doi.org/10.25077/teknosi.v7i1.2021.18-26>

Wijayanti, T. S. (2019). Pengembangan Buku Saku Biologi Berorientasi Keunggulan Lokal Untuk Meningkatkan Karakter Peserta Didik. *JUPE: Jurnal Pendidikan Mandala*, 4(5). <https://doi.org/10.36312/jupe.v4i5.848>

Wulandari, I., Nasution, M. D., & Amri, Z. (2023). Pengembangan Buku Saku Digital Berbasis Science, Technology, Engineering, and Mathematics pada Materi Perbandingan Siswa SMP. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, 7(2), 1635–1646. <https://doi.org/10.31004/cendekia.v7i2.2446>

Yaqin, M. A., & Novanda, H. (2022). Aplikasi Buku Induk Santri Terpusat di Pondok Pesantren Nurul Qadim Berbasis Framework Django. *Jurnal Dinamika Informatika*, 14(1), 53–66. <https://doi.org/10.35315/informatika.v14i1.9186>