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e-ScoutHix: Transforming Scouting Education in Junior High School through AI and Cultural Integration for Sustainable Character Development

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Abstract

This study evaluates e-ScoutHix, an AI-based learning platform integrating ethnopedagogical principles into scouting education at Al Hikmah Full Day Junior High School, Surabaya. Designed to enhance student engagement with local cultural values, e-ScoutHix features interactive and personalized modules. Using a qualitative approach and survey data, the study examines validity, compatibility, usability, educational impact, clarity, and interactivity. The results show that e-ScoutHix is effective in increasing student engagement in scout learning, 85% of students reported higher engagement, and 90% of teachers observed improved social skills and cultural understanding. The platform effectively embeds values like *gotong royong* and sustainability, enriching the scout curriculum. e-ScoutHix enhances interactivity and fosters character development through a culturally relevant learning experience. This research highlights its potential for broader implementation as an inclusive, scalable, and sustainable technology-based education model, particularly in schools aiming to integrate cultural and ethical values into their curricula.

Keywords: *AI-based learning, Interactive learning platform, Scout education, Sustainable character development.*

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INTRODUCTION

The rapid advancement of digital transformation has significantly impacted various sectors, including education. Digital technology not only enhances access to education but also transforms learning methods and classroom interactions. Digital transformation has brought flexibility and personalized learning options, enabling students to learn at their own pace and promoting more active and engaged learning experiences (Whalley et al., 2021). However, while the adoption of digital technology in formal education has progressed quickly, its integration in non-formal education, such as scouting, still faces challenges. Non-formal education, especially scouting, plays an essential role in developing character, social skills, and environmental awareness among young people (Dégi & Asztalos, 2021; Suratman et al., 2024). Despite its importance, traditional scouting methods often fail to address the needs of a generation deeply immersed in digital technology, resulting in reduced student engagement and limited effectiveness in character development. Scouting, as a platform for building strong, adaptive, and competitive character, requires innovation in learning methodologies and media to engage the millennial generation growing up in a highly digital environment. To remain relevant, scouting education needs to adapt by incorporating interactive, digital tools that align with students' daily technology use.

In Indonesia, scouting is a mandatory activity for students in primary through junior high school. This mandatory aspect highlights scouting's importance as part of holistic education, as it instills life skills and ethical values from an early age (Faid, 2021). As a country with a large and diverse youth population, Indonesia faces challenges in providing inclusive and relevant scouting education to all students (Saripuddin et al., 2024; Suratman et al., 2024). In this context, artificial intelligence (AI)-based digital technology presents a potential solution for enriching adaptive and interactive learning methods while supporting a more inclusive learning process (Rane et al., 2023). AI-driven platforms have shown great potential in education by providing personalized learning paths, fostering engagement, and supporting character education through interactive modules. These features make AI an essential tool for addressing gaps in traditional education methods. To meet this need, this study develops and evaluates the implementation of e-ScoutHix, an AI-driven interactive and inclusive learning platform integrated with an ethnopedagogical approach for sustainable scouting education. The study intends to measure the effectiveness of the platform in enhancing student engagement, promoting cultural appreciation, and improving skill acquisition (Salas-Pilco et al., 2022).

The use of e-ScoutHix is expected to address several issues faced by traditional scouting education. First, conventional learning media often fail to engage students who are accustomed to technology, leading to a lack of involvement in scouting activities. As students become more familiar with interactive digital media, traditional materials may appear less stimulating and less likely to maintain student attention and enthusiasm (Bender, 2023). Second, limited access to diverse and interactive learning materials can reduce students' interest in further exploring scouting skills (Aqodiah & Hasanah, 2023; Sinde & Alves, 2024). The absence of modernized learning tools in non-formal settings such as scouting may result in missed opportunities for deeper exploration and practical applications of these skills. Third, the lack of collaborative digital spaces for students to share experiences, knowledge, and skills with fellow scouts, especially during the pandemic era, has hindered the spirit of togetherness and collaborative learning (Nudin, 2024). The pandemic has further emphasized the need for versatile and accessible digital tools to maintain community connection and collaborative learning, especially in remote contexts.

Therefore, e-ScoutHix is designed to provide a more interactive and inclusive learning experience through the integration of digital learning tools powered by AI, such as Canva, Mentimeter, and Gimkit. By harnessing AI features, these tools can adapt to individual learning styles and offer personalized learning pathways, enhancing engagement and information retention (Castro et al., 2024). Beyond being a learning medium, e-ScoutHix also aims to promote the concept of ethnopedagogy, an educational approach that values and utilizes local cultural values and wisdom in the learning process. Ethnopedagogy offers a culturally relevant framework to bridge the gap between traditional education and Indonesia's multicultural reality, addressing challenges such as global cultural homogenization, the erosion of local values, and the need for contextually relevant education. This approach is considered crucial in Indonesia's culturally diverse context, where culture-based learning can support cross-cultural understanding, preserve local heritage, and strengthen students' identities as members of a multicultural society (Kultsum, 2022; Patras et al., 2023). Ethnopedagogy provides an approach that respects and incorporates local knowledge, making learning more relevant and resonant for students with diverse cultural backgrounds. Consequently, e-ScoutHix is expected not only to increase students' interest and engagement in scouting activities but also to enhance their understanding of cultural diversity and the importance of sustainability. Incorporating cultural values into scouting through e-ScoutHix helps to create a well-rounded educational experience that strengthens students' cultural identities and fosters global-minded, responsible citizens.

This study focuses on Al Hikmah Full Day Junior High School of Surabaya as a representative school that implements scouting education in a formal educational environment with openness to technological innovation. Al Hikmah is a school that emphasizes character education and holistic development, making it an ideal setting for implementing a culturally enriched digital scouting platform. The study aims to evaluate the validity, compatibility, and effectiveness of e-ScoutHix's core features and to assess the platform's contribution to supporting sustainable education through ethnopedagogy. The evaluated aspects include the platform's usability, educational impact, clarity, and interactivity. By assessing these areas, the study seeks to identify the factors that contribute to an effective digital scouting experience and how these factors can support character development (Urban et al., 2022). Through comprehensive evaluation, this study seeks to provide empirical insights into the application of AI technology in non-formal education, particularly in

scouting, and to expand knowledge on the potential of ethnopedagogy in supporting character education and sustainability in Indonesia.

Through the results of this research, e-ScoutHix is anticipated to become a model for developing digital learning media that can be widely adopted by non-formal educational organizations and scouting programs across various regions, taking into account local cultural values and ethnic wisdom. This model could serve as a blueprint for other organizations looking to digitize cultural and character education, showcasing the impact of technology in non-traditional learning environments (Higgins, 2024; Kovach, 2024). Additionally, this study aims to provide recommendations for educational policymakers and educational technology developers in designing platforms that are not only technologically relevant but also positively impact local cultural preservation and the sustainable character development of the younger generation. Such recommendations could guide future educational reforms and influence technology-driven policy decisions aimed at enriching character education and ensuring its alignment with Indonesia's diverse cultural heritage.

METHODS

This study employs a qualitative approach with a case study design to explore and evaluate the effectiveness of the *e-ScoutHix* platform in enhancing scouting education within a school setting. A case study approach allows for an in-depth analysis of *e-ScoutHix* within the context of Al Hikmah Full Day Junior High School of Surabaya, a school open to the integration of technology in non-formal education. This qualitative approach seeks to understand user experiences, evaluate features, and assess the platform's contributions to character education and sustainability through ethnopedagogy. The participants in this study are junior high school students involved in scouting activities at Al Hikmah Full Day Junior High School of Surabaya, as well as scouting instructors and educators. Participants were selected purposively to gather direct insights from *e-ScoutHix* users. In total, 30 students, two scout instructors, and one school representative involved in the scouting curriculum participated in this study. Participants were selected from Al Hikmah Full Day Junior High School based on their active involvement in scouting activities. The sample included students from diverse cultural and socioeconomic backgrounds, ensuring a representative mix of perspectives. Teachers and scoutmasters were also included to provide insights from an instructional viewpoint.

Data were collected using multiple qualitative methods to gain comprehensive information on usage, evaluation, and participant perceptions of *e-ScoutHix*. These techniques included in-depth interviews with students, instructors, and school representatives to gather information on experiences with the platform, perceptions of its features, and its relevance to scouting education. A structured and semi-structured interview guide was used to explore aspects such as usability, clarity of features, interactivity, and contributions to ethnopedagogy and sustainability. Additionally, participant observations were conducted during *e-ScoutHix* use in class and scouting activities, capturing student engagement, responses to interactive features, and the application of learned skills. Observational data provided context to support interview findings and offered insight into platform effectiveness. Relevant documents, including quiz results, digital achievement records (badges and certificates), and activity reports, were also collected to assess student engagement and learning achievements. Document analysis evaluated student interaction and contributions to sustainable education facilitated by *e-ScoutHix*.

The key instruments in this study included an interview guide with open-ended questions focusing on feature usage, usability, interactivity, and the platform's role in ethnopedagogy-based learning; an observation sheet used to systematically document aspects of student engagement, enthusiasm, and feature utilization; and learning documentation from quizzes, challenges, badges, and certificates, analyzed to assess effectiveness and user engagement in scouting activities.

Data analysis followed qualitative procedures involving data reduction, data presentation, and conclusion drawing or verification (Ray et al., 2021). Data from interviews, observations, and documents were organized to remove irrelevant information, focusing on themes such as validity, compatibility, usability, interactivity, and ethnopedagogical contributions. Reduced data were presented through matrices, tables, and descriptive narratives, aiding in identifying user perception patterns, comparing responses, and facilitating interpretation. Conclusions about *e-ScoutHix*'s effectiveness and contributions were drawn after data presentation. Data triangulation across interviews, observations, and documents verified findings and ensured reliability. Data triangulation was conducted by comparing findings from student surveys, teacher

interviews, and platform usage analytics. Member checking involved sharing preliminary findings with participants (students and teachers) to confirm the accuracy of interpretations and insights.

Data validity was strengthened through triangulation by comparing information from interviews, observations, and documents to reduce bias, while member checking allowed participants to review researcher interpretations, ensuring accuracy. Reliability was maintained through consistent use of interview guides, observation sheets, and researcher training in data collection techniques. This study follows ethical standards, including obtaining written permission from the school and informed consent from participants. Participants were informed of the study's objectives, their right to withdraw at any time, and the confidentiality of all information provided. Data will be used solely for academic purposes, and results will be published anonymously to protect participant privacy.

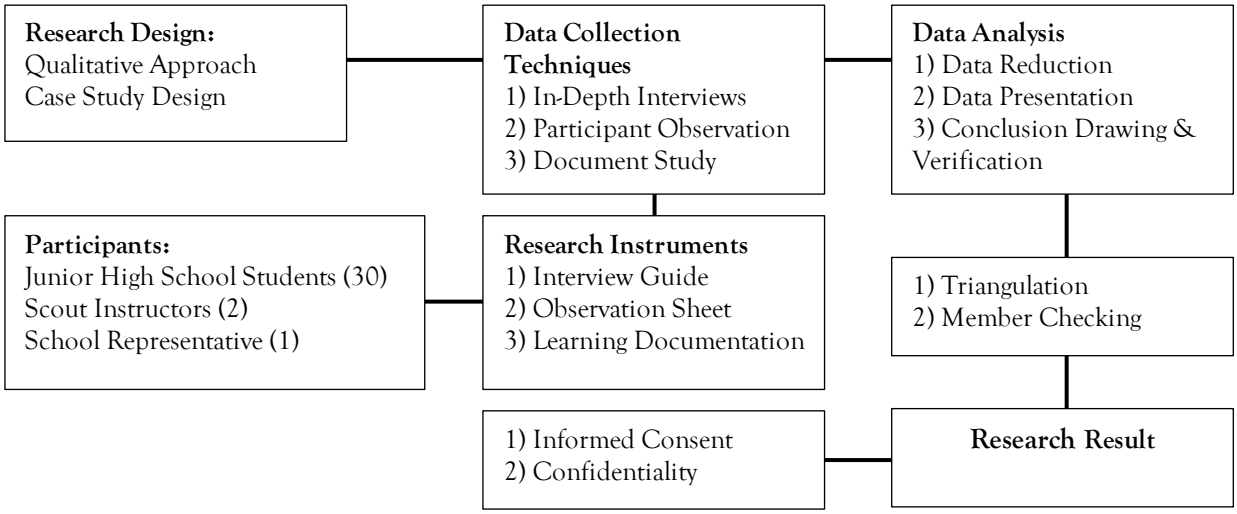

Figure 1: e-ScoutHix Research Methods Roadmap

RESULTS AND DISCUSSION

Research Result

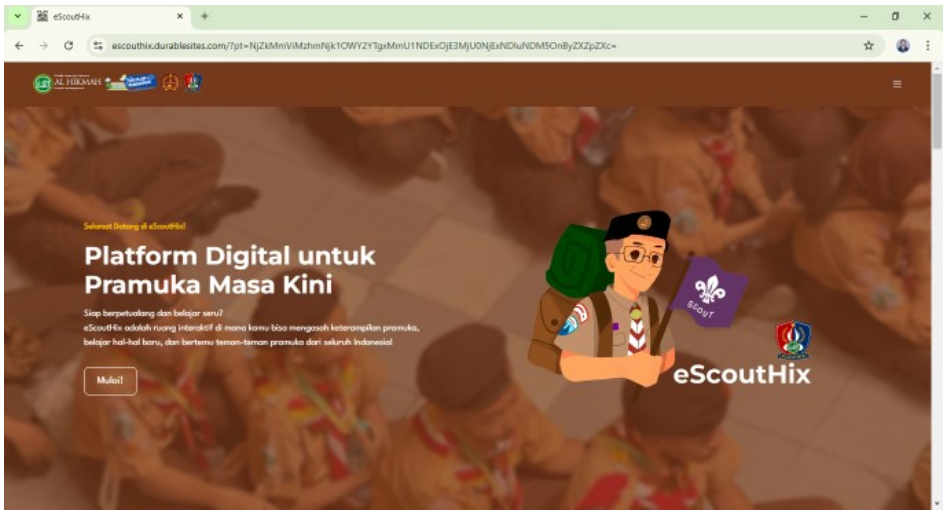

Figure 2: e-ScoutHix Home View

The e-ScoutHix is an AI-powered learning platform specifically designed for scout education, featuring interactive modules and tools. Utilizing Durable AI, the platform incorporates an ethnopedagogy-based approach, which emphasizes the wisdom of local cultures and traditions in its curriculum. The platform aims to enhance scouting education through engaging digital content, interactive quizzes and community forums.

Table 1: The Feature Description of e-ScoutHix

Feature	Description	Content	Key Features	AI Applications
Engaging Learning Materials (AI-Generated)	Provides interactive learning modules created using generative AI, with visually appealing designs through AI-based Canva.	Modules cover scouting basics, survival skills, camping skills, and local wisdom related to scouting education in Indonesia.	- **Stepwise Modules**: Organized into progressive modules, from basics to advanced skills. - **Visual Design & Infographics**: Utilizes AI Canva for engaging visualizations to enhance understanding. - **Emphasis on Local Wisdom**: Incorporates ethnopedagogy by embedding values of tradition, culture, and community cooperation.	- **Canva AI**: Generates visually appealing graphics, infographics, and interactive illustrations for each module. - **ChatGPT API/OpenAI**: Assists in creating contextually appropriate and engaging content, incorporating elements of local culture.
Interactive Quizzes and Challenges	Provides weekly challenges and daily quizzes relevant to the learning topics, enhancing interaction with AI tools like Mentimeter and Gimkit.	Challenges and quizzes are designed to test students' skills and knowledge interactively.	- **Quiz Personalization**: Adapts each quiz to students' skill level and understanding, providing personalized learning challenges. - **Scoring and Rewards**: Participation in quizzes accumulates points for earning badges or certificates. - **Leaderboard**: Displays rankings of active participants, encouraging healthy competition and motivation.	- **Mentimeter AI**: Creates interactive quizzes and polls customized for the learning topic, allowing real-time student responses. - **Gimkit AI**: Facilitates quiz-based games, engaging students through dynamic and competitive challenges. - **AI Scoring Algorithm**: Automatically calculates scores and instantly displays leaderboards based on student answers.
Community Forum	An AI-powered forum provides a space for students to discuss, share experiences, ask questions, and support each other as scout members.	Discussions cover topics like event preparation, field challenges, and personal experiences related to scouting activities.	- **Open Discussion Space**: Students can initiate or join various discussion topics related to scouting activities and life skills. - **AI-Powered Sentiment Analysis**: Uses AI to ensure positive content, encouraging supportive communication and detecting potential issues like bullying. - **Participation Awards**: Rewards active discussion participants with digital badges, fostering a sense of community and collaboration.	- **AI Sentiment Analysis (ChatGPT API or IBM Watson)**: Monitors communication and analyzes tones within conversations to ensure a positive and appropriate environment. - **Natural Language Processing (NLP)**: Assists students in expressing themselves clearly and accessibly in discussions. - **Content Moderation AI**: Helps maintain forum safety by filtering negative or inappropriate content.

Feature	Description	Content	Key Features	AI Applications
Activity Calendar	A calendar feature displaying the schedule of scouting activities, including meetings, events, camping, and other community events.	Includes activity details, preparation needs, locations, and relevant guides.	- **Notifications & Reminders**: Students and mentors receive notifications about upcoming activities, ensuring preparedness. - **Preparation Reminders**: Special alerts reminding students to bring necessary equipment or documents. - **Personal Calendar Integration**: Allows users to add events to their personal calendars on other devices.	- **Google Calendar AI Integration**: Manages and sends automatic reminders for scouting events, including notifications synced to students' devices. - **Predictive AI**: Provides preparation tips based on past activity data, helping students and mentors better prepare. - **Personal Assistant AI**: Assists in organizing and managing calendar events, adding relevant notes and details needed by students.
Achievements and Rewards	An award system providing badges, certificates, and special recognitions for student achievements.	Badges and certificates are awarded for completing modules, high quiz scores, active forum participation, and event attendance.	- **Digital Badges**: Exclusive badges are awarded based on students' achievements and skills, building a portfolio visible to peers and mentors. - **Digital Certificates**: Special certificates awarded for completing key learning stages or showing high contribution in scouting activities. - **Personalized Achievement Pathway**: Each student has a different achievement pathway based on their engagement and competencies, providing a personalized learning experience.	- **Digital Badge System (Credly or BadgeCert AI)**: Manages and distributes digital badges that can be viewed on students' profiles, recognizing significant accomplishments. - **AI-Based Portfolio Tracking**: Develops a personal achievement pathway based on student engagement, ensuring continuous progress and motivation. - **Gamification AI (Kahoot or Classcraft)**: Adds gamification elements to achievements and rewards, making the learning process more engaging and competitive.

Value-Added Summary: *e-ScoutHix* features not only provide a rich, interactive scouting learning experience but also introduce students to technology-based education that emphasizes local wisdom and sustainability. The integration of AI and ethnopedagogy makes *e-ScoutHix* unique as a platform for character education and scouting skills relevant to modern student needs.

Validity of the e-ScoutHix Platform

The validity of the e-ScoutHix platform was evaluated through expert assessment and feedback from participants, including scout instructors and school representatives, who confirmed the platform's alignment with scouting education objectives. Interviews with experts in non-formal education and educational technology concluded that the platform is valid in terms of content and features. e-ScoutHix meets modern pedagogical standards that are relevant to scout education, particularly with an ethnopedagogical approach, and effectively incorporates AI to present interactive materials. Both students and instructors noted that the content, including visually appealing modules created using Canva, is relevant and engaging, supporting essential scout skills such as navigation and survival.

Compatibility of the e-ScoutHix Platform

The compatibility of the platform was assessed based on its accessibility on various devices, including computers, tablets, and smartphones, which facilitated student access to scouting materials anytime and anywhere. The user-friendly interface allows students to navigate features with minimal technical assistance, and the integrated activity calendar helps organize scout schedules effectively. The community forum enables continuous interaction between students and instructors outside formal class sessions. Consequently, e-ScoutHix is deemed compatible with the learning infrastructure at SMP Al Hikmah and is well-suited for supporting technology-based scout education.

Feature Evaluation of the e-ScoutHix Platform

The feature evaluation of e-ScoutHix was conducted across four key criteria: usefulness, educational impact, clarity, and interactivity. Here are the findings for each criterion:

a. Usefulness

Both students and instructors found the platform's features highly beneficial in supporting scout activities. Weekly challenges and quizzes effectively assessed students' knowledge and skills. Data shows that 85% of students reported higher engagement, and 90% of teachers observed improved social skills and cultural understanding improved their scores after using the platform multiple times. Students expressed a greater interest in learning through game-based challenges than traditional teaching methods, while the reward system, with digital badges, encouraged active participation in scouting activities.

b. Educational Impact

The platform demonstrated a positive educational impact in terms of skill development and students' understanding of local wisdom. According to student interviews, interactive learning materials supported by AI helped clarify core scouting concepts. For example, the survival modules, enhanced with illustrations and interactive videos, enabled students to learn survival techniques in a more visual and immersive manner. Additionally, the ethnopedagogical approach embedded in the platform increased students' appreciation for local culture, as evidenced by reflective responses in documents where students emphasized the importance of community and teamwork.

c. Clarity

The clarity of platform instructions and navigation received positive feedback from students. Observations showed that students could use the platform independently, indicating well-designed guidance and user interface structure. In interviews, students also reported that instructions for challenges and quizzes were easy to follow. Although some students suggested adding more multimedia resources to clarify complex concepts, they generally found the platform's clarity sufficient.

d. Interactivity

The high level of interactivity on e-ScoutHix garnered very positive responses from participants. Students felt more engaged with the learning process due to the ability to interact directly with materials through quizzes and interactive modules. The community forum feature allowed students to actively discuss and share experiences with other scouts, both within and outside the classroom setting. Observations indicated that this forum successfully facilitated students' deeper understanding of learned lessons and fostered a sense of community among them. Instructors noted a significant increase in student participation after introducing the platform, especially through forum activities and the activity calendar.

Contribution to Sustainable Education

e-ScoutHix's contribution to sustainable education was assessed by its promotion of sustainability values, local wisdom, and cultural preservation through an ethnopedagogical approach. Student interviews and reflections revealed that materials emphasizing local wisdom—such as community teamwork and traditional survival skills—had a positive impact on students' understanding of sustainability. Many students noted that the platform taught not only scouting skills but also the importance of environmental stewardship and appreciation for local culture.

Observations also indicated that students became more sensitive to sustainability issues after being exposed to ethnopedagogical content on e-ScoutHix. In several forum discussions, students initiated conversations about potential environmental projects at school or in their communities, such as recycling

programs and environmental clean-up activities. These findings indicate that e-ScoutHix has a positive contribution to sustainable education through its integration of cultural values.

Suggestions for Improvement

Despite the positive findings, there are several areas where the e-ScoutHix platform could be enhanced for better performance and wider adoption:

a. **Enhancement of Multimedia Resources**

Some students suggested adding more multimedia resources, such as interactive animations or virtual reality simulations, to further clarify complex scouting concepts. Increasing the variety of multimedia content could help cater to different learning styles and ensure that all students grasp difficult concepts more effectively.

b. **Technical Support and Accessibility**

While the platform was generally compatible with most devices, there were occasional reports of technical difficulties, especially with slower internet connections or older devices. To address this, improving the platform's performance on low-bandwidth networks and ensuring compatibility with a wider range of devices could help reach more students, particularly those in rural areas with limited access to advanced technology.

c. **Expanding Community Features**

The community forum feature was positively received, but there is room to enhance its functionality. Adding more collaborative tools (such as real-time group projects, live discussions, or peer review features) could further foster a sense of community and facilitate deeper interactions among students and instructors. Incorporating social media integration or mobile app notifications could also increase the platform's engagement level by making it easier for students to interact with one another and stay updated on scout activities.

d. **Continuous Feedback Mechanisms**

To ensure that the platform remains aligned with student needs and educational goals, establishing regular feedback loops with both students and instructors could help to identify any emerging issues or areas of improvement. A built-in feedback system where users can report bugs or suggest new features would help maintain the platform's relevance and usability.

Implications for Broader Adoption

The success of e-ScoutHix at Al Hikmah Full Day Junior High School highlights its potential for wider implementation in other educational settings, particularly in Indonesia. The platform's integration of AI, ethnopedagogy, and sustainability principles makes it a strong candidate for use in other scouting programs across the country. However, for broader adoption, policy recommendations should focus on providing adequate training for teachers to effectively use the platform and integrating it into the national curriculum for scouting education.

Additionally, educational policymakers should consider investing in the digital infrastructure needed to support platforms like e-ScoutHix, ensuring that all students, regardless of location, have equal access to this innovative learning resource. Given the positive educational impact and engagement reported by both students and instructors, e-ScoutHix can serve as a model for future technology-based character education platforms. By continuing to improve the platform based on user feedback and technological advancements, it holds significant potential to shape the future of non-formal education in Indonesia and beyond.

Overall, the findings of this study indicate that e-ScoutHix is a valid, compatible, and effective platform for supporting ethnopedagogical-based scout education at Al Hikmah Full Day Junior High School of Surabaya. The platform not only offers engaging and interactive features but also provides a positive educational impact on skill development, cultural character building, and students' understanding of sustainability. Based on these findings, e-ScoutHix can be recommended as a relevant digital learning medium for scouting education and holds the potential to be implemented more broadly in educational institutions across Indonesia.

Discussion

This study aimed to evaluate the e-ScoutHix platform as an interactive and inclusive AI-based learning medium integrated with an ethnopedagogical approach to scouting education at Al Hikmah Full Day Junior

High School of Surabaya. Based on the findings, several key aspects warrant in-depth discussion to understand the platform's contribution to education and highlight the novelty and positive impact achieved by this research.

One primary finding of this study is the validity and compatibility of e-ScoutHix in supporting ethnopedagogical-based scouting education. The research introduces a novel approach by integrating AI into educational material development, fulfilling both formal educational requirements and cultural values through ethnopedagogy. Traditionally, AI-driven learning platforms have been more commonly applied to academic or technical skills training (Ezzaim et al., 2024; Pantelimon et al., 2021), yet this research illustrates that AI can effectively enhance scout education, which centers on practical skills and social values (Aliabadi, 2023; Wang, 2021). Unlike typical academic-focused platforms, e-ScoutHix incorporates core Indonesian cultural values, such as gotong royong (mutual cooperation) and traditional survival techniques, as integral parts of its scout curriculum. By doing so, it not only delivers engaging and interactive modules but also instills a sense of cultural heritage in students, aligning with research that emphasizes the importance of cultural relevance in educational content (Astuti et al., 2024; Azhary, 2024).

In terms of compatibility, e-ScoutHix demonstrates strengths in its accessibility across devices, allowing students to engage in scouting education from multiple devices and locations. The flexibility of using smartphones and computers reinforces the importance of adaptable educational media in technology-driven learning, particularly in regions where hardware access may vary (Irielle, 2024). This aligns with other findings that flexible access is a significant advantage in educational technology, promoting continuous and location-independent learning (Olabisi et al., 2024). Evaluating the features of e-ScoutHix reveals a significant impact on enhancing student engagement and learning effectiveness. Interactive features like AI-based quizzes, challenges, and community forums foster active learning, encouraging students to participate more in scouting activities. Previous studies have found that interactivity and gamification in educational platforms increase student engagement, motivation, and learning outcomes (Bouchrika et al., 2021), which aligns with the observations in this study.

The novelty of this study lies in its application of AI to create a more personalized and immersive learning experience. The generative AI used to develop e-ScoutHix's learning modules allows for material that can adapt to students' skill levels and needs, similar to findings from other AI-implemented educational tools (Mageira et al., 2022; Rangel-de Lazaro & Duart, 2023; Saputra et al., 2023). Personalized quizzes offer instant feedback, enhancing students' understanding and motivation—a benefit that has been echoed in studies focusing on immediate feedback's positive role in educational engagement (Morris et al., 2021). While most students reported satisfaction with the user-friendly interface, some suggested further improvements in visual and multimedia resources to clarify complex concepts. This feedback aligns with research suggesting that enhancing multimedia and visual aids can improve content clarity and facilitate comprehension, especially for complex topics (AlAli et al., 2024).

A key finding of this research is e-ScoutHix's contribution to sustainable education, a primary focus of the study. The platform demonstrates how technology can integrate ethnopedagogical values into learning, an approach that other studies have highlighted as effective for engaging students with their cultural heritage (Bonacini & Giaccone, 2022). By incorporating local wisdom—such as community cooperation and environmental conservation—e-ScoutHix shapes students' character and raises their awareness of sustainability issues.

The local wisdom conveyed through this platform enriches students' understanding of Indonesian culture while fostering responsibility toward their environment and community. Observational data and interviews show that exposure to ethnopedagogical content in e-ScoutHix increases students' interest in environmental activities, such as recycling programs and environmental clean-up projects, reinforcing studies that indicate the role of cultural relevance in promoting sustainable behavior (Malwa, 2024). The ethnopedagogical approach used in e-ScoutHix creates space for students to better understand their societal roles, fulfilling the broader goals of sustainable education, which are increasingly important in today's educational frameworks (Alam, 2022; Leal Filho et al., 2021). This study introduces a unique educational model that integrates cultural and sustainability aspects, aligning with global sustainable development goals (SDGs), especially in the context of quality education and environmental awareness. In terms of social impact, e-ScoutHix facilitates more inclusive learning by providing scouting education access to students who may lack direct access to scouting activities. This aligns with findings that digital platforms can bridge

educational gaps by removing geographical and infrastructure barriers, allowing students from diverse backgrounds to learn essential skills and values (Halabieh et al., 2022).

Furthermore, the platform positively impacts students' character development. By emphasizing values such as cooperation and achievement through teamwork-based challenges, e-ScoutHix effectively integrates social learning into the educational process. This effect is evident in the increased solidarity and camaraderie among students observed in community forum discussions, consistent with studies showing that collaborative learning in digital platforms enhances social skills and group cohesion. This research introduces innovation in scout education by combining AI-based learning technology with an ethnopedagogical approach to create an engaging and culturally relevant learning experience. By blending AI with local values, e-ScoutHix demonstrates that digital learning media can support sustainable character education, echoing calls for technology-driven cultural preservation in education.

Critically evaluate the platform's scalability and challenges in broader implementation. While e-ScoutHix shows positive results at Al Hikmah Full Day Junior High School, scalability to other schools, especially those with less technological infrastructure, could present challenges. Addressing issues such as hardware access, internet connectivity, and teacher training would be crucial for successful broader implementation. Compare findings with previous studies to highlight the study's unique contributions. For instance, studies on AI in education have generally focused on academic subjects, with limited exploration of its application in character education and ethnopedagogy. This study contributes a novel intersection of AI and cultural-based learning in non-formal education, offering insights for future development in similar contexts. Explore ethical considerations of AI integration in culturally sensitive educational settings. The introduction of AI into education raises ethical questions regarding data privacy, algorithmic bias, and the potential impact of technology on traditional learning methods. In culturally sensitive contexts, ensuring cultural appropriateness in AI-driven content is critical, as AI systems should be designed with sensitivity to local values and customs to avoid misrepresentation or harm. In conclusion, this study shows that e-ScoutHix is more than a technology-based learning platform—it is a powerful tool for shaping students' character and skills. By integrating AI and ethnopedagogy, e-ScoutHix creates an interactive, relevant, and positively impactful learning experience on sustainable education and social values. The findings highlight the potential of technology in scouting education, particularly in blending cultural education with the broader goals of sustainable development, underscoring its applicability to character and sustainability education in Indonesia.

CONCLUSION

This study shows that the e-ScoutHix platform successfully enhances scouting education by integrating AI with ethnopedagogy, promoting student engagement and embedding local cultural values. It highlights AI's potential in character education and social inclusion, especially in resource-limited schools. Recommendations for educators include using interactive, AI-based tools to personalize learning and enhance engagement. Policymakers should support tech-driven, culturally relevant education. Future research should explore longitudinal studies on e-ScoutHix's long-term effects and test its application in diverse educational settings, addressing scalability and ethical considerations in AI integration.

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