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FOSTERING REAL WORLD SKILLS IN CHILDREN THROUGH INTERACTIVE LEARNING APPS

Santo Tjhin[1], Benning Mahamaya[2], Jocelyn Lim[3], Samantha Ingrid[4]

[1,2,3,4]Visual Communications Design, Faculty of Engineering and Technology, Sampoerna University, Jakarta, Indonesia

ABSTRACT

Magodang is an innovative application designed for children aged 8–14, as well as their parents and educators, aiming to develop real-world skills and build student portfolios. In an increasingly competitive educational landscape, portfolios are essential for showcasing students' academic and professional journeys. However, many students, including those who are homeschooled or have special needs, face significant challenges in accessing skill development programs. Magodang addresses these barriers by connecting users with workshops, competition preparation programs, coaching sessions, and certifications through a user-friendly platform enriched with gamification features. The application provides personalized program recommendations, intuitive navigation, and collaborative tools that empower parents and educators. These features help parents identify programs aligned with their children's interests and assist educators in integrating extracurricular activities into classroom settings. The research employs the Semantic Literature Review (SLR) method, descriptive qualitative analysis, and the Design Thinking framework to create an interactive and relevant platform. Tools such as Miro, Figma, and Google Forms are used for ideation, prototyping, and surveys. The findings demonstrate that Magodang enhances student engagement, fosters collaboration among stakeholders, and addresses gaps in traditional education systems. It provides a practical solution for early skill development, creating an inclusive and accessible educational environment for all learners.

KEYWORDS

Educational App, Interactive, UI/UX

Introduction

In today's fast-paced and competitive global education landscape, it is essential to equip younger generations with the skills and resources necessary for success. Preparing students for future challenges requires not only excellence in academic subjects but also active participation in extracurricular activities, workshops, and structured programs. These activities are vital for developing achievement-oriented portfolios that showcase students' skills, experiences, and accomplishments, effectively bridging the gap between formal education and real-world applications. Despite their critical importance, current education systems often fail to provide adequate support for

CONTACT santo.tjhin@sampoernauniversity.ac.id

portfolio development, leading to significant gaps, particularly for homeschooling families and students with special needs. Research by Mardiati [1] highlights the challenges parents face when selecting and organizing educational opportunities for their children in homeschooling settings. Furthermore, Stockall [2] notes the difficulties in establishing effective learning pathways for students with learning disabilities, suggesting that structured programs could facilitate smoother educational transitions.

Modern challenges, such as the widespread adoption of online learning, have complicated parents' and educators' ability to provide comprehensive educational support. Studies by Ningsih et al. and Wijayanti et al. [3]demonstrate that online learning often adds to the burden on parents, impacting their ability to manage time, organize the learning environment, and obtain necessary resources. These challenges emphasize the urgent need for innovative solutions that effectively address the growing demands of students, parents, and educators alike. Magodang application stands out as a groundbreaking solution specifically designed to fill these gaps in educational support systems. Targeting children aged 8 to 14, along with their parents and educators, Magodang serves as a comprehensive platform that connects users to workshops, competitions, certification opportunities, and other skill-building programs. By leveraging cutting-edge design principles such as gamification and personalization, Magodang creates an engaging and collaborative learning ecosystem tailored to meet diverse needs. Gamification within the application significantly enhances student engagement by incorporating features like achievement badges, progress tracking, and interactive challenges. Findings from Mediavilla et al.[4] validate this approach, showing that gamified learning environments promote self-directed learning and sustained engagement. Personalization features, including recommendations based on individual interests and needs, ensure that the platform remains relevant and impactful for every user.

Additionally, Magodang streamlines the process of guiding and mentoring children for both parents and educators. The application offers intuitive navigation tools and easy access to a wide array of educational opportunities, eliminating logistical challenges for parents. Research by Sharma [5]confirms that active parental involvement in school-related activities significantly enhances students' motivation and academic performance. Magodang facilitates such involvement by reducing barriers and providing actionable tools for parents. Educators also benefit from the platform's curated list of extracurricular activities and skill-enhancement programs that can be seamlessly integrated into classroom instruction. Studies by Want[2] and Pilco et al.[6] affirm the critical value of incorporating diverse programs within formal education to improve student outcomes and foster a positive learning environment. The inclusion of structured programs, such as workshops and certifications, further empowers educators to support holistic student development. This research is groundbreaking in its dual

focus: fostering skill-building and portfolio development for students while encouraging collaboration among students, parents, and educators. Unlike conventional educational tools that often serve only one demographic, Magodang delivers a multi-dimensional approach that bridges the gaps between formal education, extracurricular activities, and personalized skill-building opportunities.

This study significantly contributes to existing knowledge by addressing critical shortcomings in traditional education systems and harnessing modern technology to create a scalable and inclusive solution. By integrating user-centered design, gamification, and personalization, Magodang enhances accessibility and fosters long-term engagement and collaboration. Ultimately, this research empowers young learners, streamlines parental involvement, and enriches educational practices, paving the way for a more inclusive and dynamic education in today's fast-paced and competitive global education landscape, it is essential to equip younger generations with the skills and resources necessary for success. Preparing students for future challenges requires not only excellence in academic subjects but also active participation in extracurricular activities, workshops, and structured programs. These activities are vital for developing achievement-oriented portfolios that showcase students' skills, experiences, and accomplishments, effectively bridging the gap between formal education and real-world applications.

Despite their critical importance, current education systems often fail to provide adequate support for portfolio development, leading to significant gaps, particularly for homeschooling families and students with special needs. Research by Mardiati[1] highlights the challenges parents face when selecting and organizing educational opportunities for their children in homeschooling settings. Furthermore, Stockall [7] notes the difficulties in establishing effective learning pathways for students with learning disabilities, suggesting that structured programs could facilitate smoother educational transitions. Modern challenges, such as the widespread adoption of online learning, have complicated parents' and educators' ability to provide comprehensive educational support. Studies by Ningsih et al.[3] and Wijayanti et al. [8] demonstrate that online learning often adds to the burden on parents, impacting their ability to manage time, organize the learning environment, and obtain necessary resources. These challenges emphasize the urgent need for innovative solutions that effectively address the growing demands of students, parents, and educators alike.

The Magodang application stands out as a groundbreaking solution specifically designed to fill these gaps in educational support systems. Targeting children aged 8 to 14, along with their parents and educators, Magodang serves as a comprehensive platform that connects users to workshops, competitions, certification opportunities, and other skill-building programs. By leveraging cutting-edge design principles such as gamification

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Gamification within the application significantly enhances student engagement by incorporating features like achievement badges, progress tracking, and interactive challenges. Findings from Mediavilla et al.[4] validate this approach, showing that gamified learning environments promote self-directed learning and sustained engagement. Personalization features, including recommendations based on individual interests and needs, ensure that the platform remains relevant and impactful for every user. Additionally, Magodang streamlines the process of guiding and mentoring children for both parents and educators. The application offers intuitive navigation tools and easy access to a wide array of educational opportunities, eliminating logistical challenges for parents. Research by Sharma[5] confirms that active parental involvement in school-related activities significantly enhances students' motivation and academic performance. Magodang facilitates such involvement by reducing barriers and providing actionable tools for parents. Educators also benefit from the platform's curated list of extracurricular activities and skill-enhancement programs that can be seamlessly integrated into classroom instruction. Studies by Want[2] and Pilco et al.[6] affirm the critical value of incorporating diverse programs within formal education to improve student outcomes and foster a positive learning environment. The inclusion of structured programs, such as workshops and certifications, further empowers educators to support holistic student development.

This research is groundbreaking in its dual focus: fostering skill-building and portfolio development for students while encouraging collaboration among students, parents, and educators. Unlike conventional educational tools that often serve only one demographic, Magodang delivers a multi-dimensional approach that bridges the gaps between formal education, extracurricular activities, and personalized skill-building opportunities. This study significantly contributes to existing knowledge by addressing critical shortcomings in traditional education systems and harnessing modern technology to create a scalable and inclusive solution. By integrating user-centered design, gamification, and personalization, Magodang enhances accessibility and fosters long-term engagement and collaboration. Ultimately, this research empowers young learners, streamlines parental involvement, and enriches educational practices, paving the way for a more inclusive and dynamic educational landscape and scape.

Method

This study employs a mixed-method approach, integrating qualitative and quantitative methodologies. The qualitative aspect involves thematic analysis to explore user behavior, needs, and challenges, while the quantitative aspect evaluates usability and satisfaction metrics through structured surveys. This combination ensures a

comprehensive understanding of the application's effectiveness. The research is structured using the Design Thinking framework, which consists of five iterative steps: Empathize, Define, Ideate, Prototype, and Test. This approach emphasizes user-centric solutions, fostering innovation and practicality in the development process. The research focuses on developing and evaluating Magodang, an interactive platform designed to cultivate real-world skills in children aged 8–14. It examines the platform's gamification, user interface design, and personalization features to ensure they address the needs of students, parents, and educators.

1. Respondents and Sampling

Participants were selected purposively to include those most likely to benefit from the application:

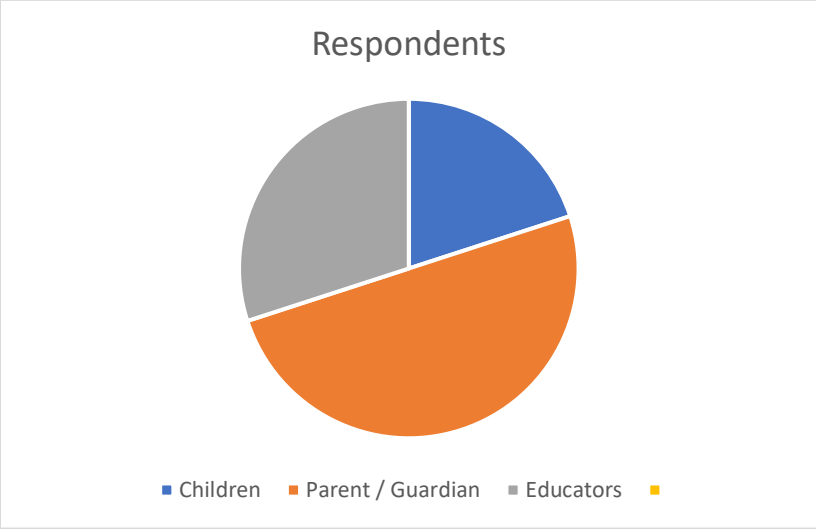

Diagram 1. Respondents magodang
[Source : Personal Data 2024]

- Children (8–14 years) : 100 participants (focusing on usability, engagement, and gamification).
- Parents/Guardians : 50 participants (to assess alignment with educational objectives).
- Educators : 30 participants (analyzing integration with classroom activities).

The table below illustrates the distribution of participants involved in this study. It highlights three primary groups—children, parents, and educators—along with their respective roles and purposes in the research. Children represented the majority of participants, as they were the primary target users for testing usability and

engagement. Parents and educators provided vital insights to ensure the app aligned with educational goals and teaching practices, further enriching the design process.

Table 1. Research Participants
[Source : Personal Data 2024]

Group	Number of Participants	Purpose
Children	100	Test engagement and usability
Parents	50	Align app features with educational goals
Educators	30	Integrate app with teaching practices

2. Data Collection Methods

The study employed a variety of methods to gather comprehensive data:

a) Surveys: Conducted via Google Forms to capture structured feedback on usability and satisfaction.

b) Interviews and Focus Group Discussions (FGDs): Provided in-depth insights into user needs and expectations.

c) Observations: Monitored user interactions during testing to identify usability challenges and refine the application.

3. Data Analysis

Data was analyzed through the following approaches:

a) Qualitative Analysis: Thematic analysis identified recurring patterns and insights from interviews and FGDs.

b) Design Thinking Process: Guided iterative refinements of the application:

- Empathize : Gathered input from users to understand their challenges.
- Define : Identify core problems and goals.
- Ideate : Brainstormed potential solutions using tools like Miro.
- Prototype : Developed interactive designs using Figma.
- Test : Conducted usability testing and implemented feedback for improvements.

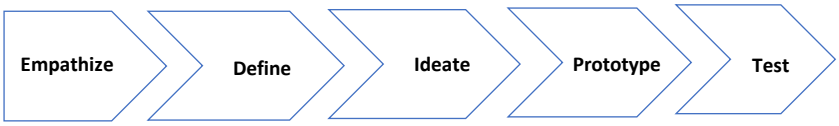

Diagram 2. Respondents Magodang
[Source : Personal Data 2024]

The Design Thinking framework forms the backbone of this study's methodology. The design thinking process starts from problems faced by humans and aims to provide solutions to these problems. During the Empathize phase, the research team conducted interviews and distributed surveys to understand the unique needs of children, parents, and educators. Insights gathered informed the Define phase, where core problems such as usability challenges and content relevance were identified. The Ideate phase facilitated brainstorming sessions using Miro, resulting in innovative solutions such as gamification features and personalized content recommendations.

These ideas were transformed into functional prototypes during the Prototype phase, using Figma to create intuitive designs that align with user feedback. The Test phase involved usability trials with participants, focusing on engagement metrics and the app's ability to meet user expectations. Iterative refinements were made based on quantitative data analysis, ensuring that the application effectively bridges gaps in traditional education systems. This comprehensive methodology ensures that Magodang is not only user-friendly but also impactful, addressing the multifaceted needs of its diverse user base. By combining structured data collection, iterative design, and stakeholder collaboration, the research provides a robust foundation for fostering real-world skills in young learners.

4. Tools and Software

This research used several tools and software to support ideation, design, and data processing. Miro facilitated collaborative brainstorming during the Ideate phase, enabling the team to map out user needs and generate solutions. Figma was employed in the Prototype phase to create interactive and visually appealing app mockups, focusing on usability for children and their parents. Google Forms was crucial for data collection, allowing structured surveys to gather feedback from participants, while Microsoft Excel processed survey data, generating descriptive statistics to identify patterns in user satisfaction and engagement. These tools worked cohesively to ensure efficient workflows, from conceptualization to evaluation, maintaining a user-centered approach throughout the development process.

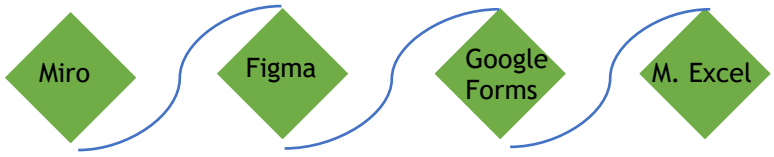

Diagram 3. Tools and Software
[Source : Personal Data 2024]

Discussion

This research uses the Semantic Literature Review (SLR) method to identify the needs and preferences of students, parents, and educators. The findings emphasize the importance of extracurricular activities in enhancing students' portfolios. Participation in competitions, camps, counseling, and coaching programs is particularly effective in developing skills and boosting confidence. However, the ongoing challenge of finding suitable educational programs for children persists, indicating a need for innovative strategies. This gap presents an opportunity for digital solutions like Magodang to serve as the necessary change-makers. By offering comprehensive educational services, including competition preparation, extracurricular workshops, academic counseling, and certification coaching, Magodang simplifies access and enrollment, providing tailored educational opportunities.

1. Empathize Stage

The Empathize stage of this research focuses on understanding the needs, challenges, and expectations of the primary users of the Magodang application, which includes children aged 8-14 years, parents, and teachers. The methods used to gather this information are as follows:

- Conducting interviews and focus group discussions (FGDs) with students, parents, and teachers to identify key barriers, such as difficulties in finding relevant educational programs, children's lack of motivation, and parents' challenges with time management.
- Performing direct observations to analyze how students use similar apps and how they create their portfolios.

This study has adopted the Semantic Literature Review (SLR) method in its bid to establish the needs and preferences of the students, parents, and educators. The findings underscore the importance of extra curricular activities to the development of student’s portfolios which show that involvement in competitions, camps, counseling and coaching programs is impactful in developing skills and confidence levels. Moreover, the issue of how to find the right educational programs for children/students still remains an issue, an indication of the need for innovative strategies. This gap opens

up the possibility of digital solutions like Magodang to operate as the change makers the society needs. By offering comprehensive educational services, including competition preparation, extracurricular workshops, academic counseling, and certification coaching, Magodang simplifies access and enrollment, providing tailored educational opportunities.

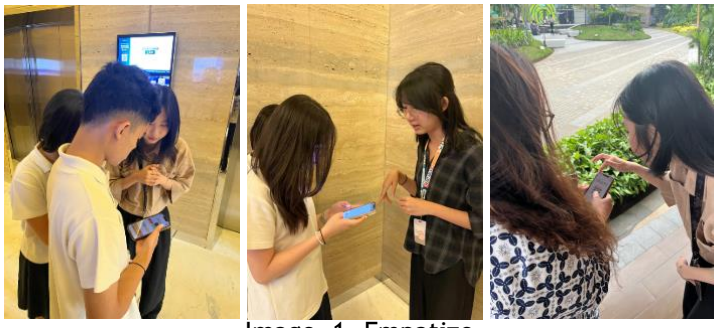

Image 1. Empatize
[Source : Personal Data 2024]

Findings:

- Children crave engaging, fun, gamification-based learning experiences to fuel their curiosity.
- Parents need practical guidance to navigate the array of educational programs that truly support their children's development.
- Teachers require effective tools that extend learning beyond the classroom setting.

2. Define

During the define stage, researcher meticulously extracted data to validate the literature that best aligns with our research findings. Through an empathetic approach, we identified critical issues:

- Limited accessibility to educational programs: There is a noticeable gap in offerings that nurture portfolio development from an early age.
- Low child engagement: Current educational apps often lack the captivating elements needed to keep children actively involved.
- Insufficient resources for parents and teachers: Integrating extra educational activities into daily routines poses significant challenges.

These insights shaped our design goal: to develop an intuitive, engaging technology-based app that leverages gamification to significantly enhance user engagement.

3. Ideate

In the ideation phase, we utilized the Miro platform, where our research team collaborated with app developers to devise innovative solutions to user challenges. The results of this brainstorming session included:

- Gamification features: A robust system for awarding badges, maintaining a scoreboard, and tracking progress.
- Personalization: Tailored program recommendations based on individual user interests.
- Intuitive navigation: A child-friendly interface featuring the app mascot as the 'Learning Buddy' to guide users.
- Family engagement: User-friendly features that empower parents to easily monitor their child's progress, fostering a supportive learning environment.

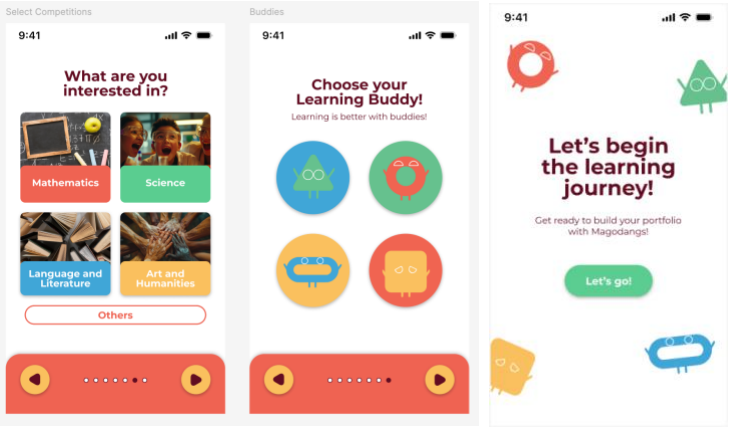

Image 2. Learning Buddy
[Source : Personal Data 2024]

4. Prototype

At the prototype and implementation stage, researchers conducted an in-depth analysis of data synthesis, leading to the creation of innovative media concepts and production techniques. Using Figma, we developed application prototypes that are poised to enhance user experience. These prototypes feature:

- Main Dashboard: Seamlessly displays student progress and offers personalized program recommendations.

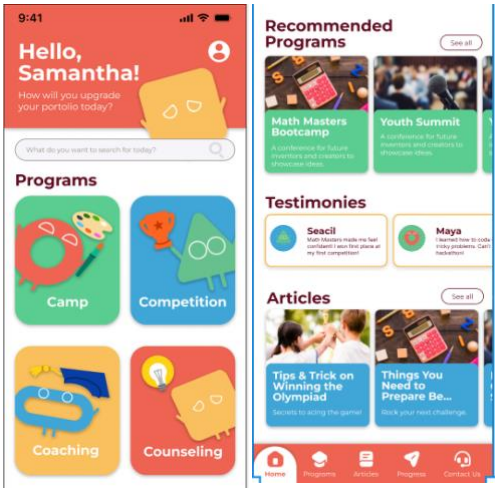

Image 3. Main dashboard
[Source : Personal Data 2024]

- Progress Tracking System: Inspires and motivates users to engage actively with their learning journey.

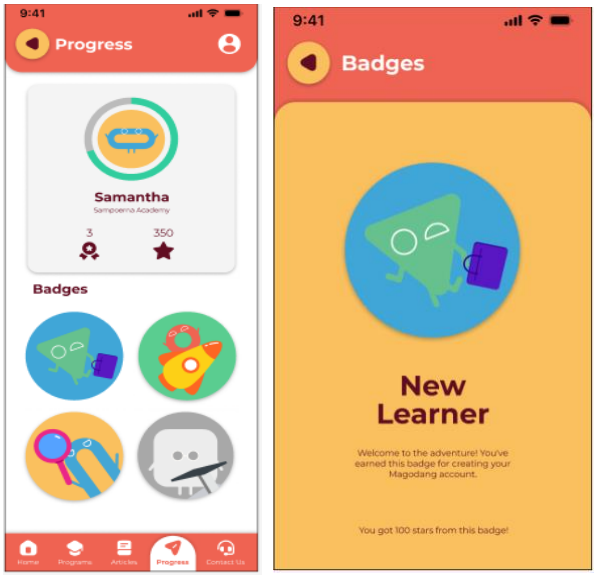

Image 4. Progress Tracking System
[Source : Personal Data 2024]

- Dynamic Visual Interface: Captivating bright colors and charming mascot illustrations are designed to attract and keep children's attention.
- Onboarding Feature: An intuitive guide that equips new users with the knowledge to navigate the app effortlessly.

- Thorough Internal Testing: Rigorous testing was conducted to identify and resolve initial bugs, ensuring a smooth transition to user testing.

Image 5. Features
[Source : Personal Data 2024]

5. Testing

This stage involved testing the prototype with 50 participants (36.8% children, 47.4% parents, the rest teachers): Beta testing: Conducted with early app versions to get feedback, with Usability testing: Observed user interactions to evaluate navigation, feature functionality, and visual design.

Through the testing results, the following results were found:

- Design: Considered clear, but some users felt the information was too overwhelming.
- Motivation: Gamification features proved effective in increasing motivation.
- Navigation: Easy to use, although loading speed needs improvement.

This stage focused on testing the prototype with 50 participants, comprising 36.8% children, 47.4% parents, and the rest teachers. We initiated beta testing to gather insightful feedback from early app versions, alongside usability testing, where we observed user interactions to assess navigation, functionality, and visual appeal. The results yielded compelling insights:

- Design: While the design was generally clear, some users expressed that the information could sometimes feel overwhelming.
- Motivation: The gamification features successfully boosted user motivation, engaging participants more effectively.
- Navigation: Users found the app easy to navigate, although enhancing loading speed is essential for a seamless experience.

Overall, these findings provide a clear direction for improving our app and ensuring it meets users' needs.

Criteria	Positive Feedback (%)	Notes
Design	94.7%	Simplify displayed information.
Motivation	87.5%	Gamification highly appreciated.
Navigation	89.2%	Improve loading speed.

Table 02. Testing results
[Source : Personal Data 2024]

The Magodang app was developed using the Design Thinking framework to effectively tackle pressing challenges in the education system. By prioritizing empathy in the Empathize stage, we uncovered the vital needs of students, parents, and teachers for educational tools that are both engaging and easily accessible. The Define stage allowed us to pinpoint critical issues, such as inadequate access to educational resources and low engagement levels among users. In the Ideate stage, we crafted innovative solutions like gamification, progress tracking, and intuitive navigation to enhance user experience. The app's prototypes were rigorously tested in the Prototype and Test stages, resulting in exceptional satisfaction with both design and functionality. Ultimately, the Magodang app not only equips children with essential real-world skills but also promotes collaboration among students, parents, and educators, making it a transformative tool for modern education.

Conclusion

With a focus on concise communication and personalized features, Magodang app effectively addresses the diverse needs of its audience, streamlining the process of discovering and participating in valuable educational opportunities. This thoughtful approach ensures an engaging, accessible, and efficient experience for all users. The Magodang application serves as an innovative solution to challenges in the educational landscape of accessing resources for building children’s academic portfolios. The app bridges the gap between students, parents, and educators to programs such as competitions, workshops, and certifications, providing easier access to preparations. Designed for users aged 8 to 14, as well as their parents and educators, the app enhances engagement and user experience through vibrant visuals and gamification, while also maintaining professionalism. With compact information and personalized features, The Magodang application aims to cater the diverse needs of its audience, further fostering effective processes. Through Semantic Literature Review (SLR) and qualitative approach, this study assesses the role of Magodang application in addressing challenges of accessing educational opportunities. The findings highlight the positive feedback regarding the app’s user-friendly interface with coherent and vibrant visuals.

The colorful and illustrative visuals, including the mascots, further cater the needs of children in having a fun and engaging atmosphere throughout the app. Additionally, the gamification feature with badge collecting system, has gained users' approval in motivating and helping track their progress and achievements, making educational processes more enjoyable for children. Users also find concise language structure throughout the app enhances the app's effectiveness in increasing engagement and accessibility for children. The Magodang application has the potential to revolutionize educational processes in Indonesia, creating a more inclusive, accessible, and impactful system. It offers a new benchmark for digital educational platforms by fostering the aspirations of the younger generations, allowing them to grow and develop academically and personally.

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