

DESIGNING A MIT APP INVENTOR-BASED MATHEMATICS LEARNING APPLICATION TO ENHANCE STUDENTS' CONCEPTUAL UNDERSTANDING: A DEVELOPMENT STUDY

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Article Info

Article History

Received: 21-07-2025

Revised: 11-09-2025

Accepted: 15-09-2025

Keywords

Mathematics Learning Application;
MIT App Inventor;
Conceptual Understanding

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Abstract

The background of this study lies in the limited use of technology-based learning media, which is essential to improve the quality of learning. Therefore, this research aims to: (1) describe the process of developing a mathematics learning application using MIT App Inventor, (2) examine the validity of the developed application, (3) measure its effectiveness, (4) assess its practicality, and (5) analyze students' responses to the application. The research employed a Research and Development (R&D) approach with the ADDIE model (Analysis, Design, Development, Implementation, Evaluation). The subjects of this study were 29 students of class VIII-A at SMP Negeri 24 Bandung during the 2022/2023 academic year. Research instruments included validation questionnaires for material experts and media experts, a practicality questionnaire, post-test sheets, and a student response questionnaire. The results of the analysis indicate that the developed mathematics learning application is categorized as good, with a validation score of 86.33 (very valid) from material experts and 70.5 (valid) from media experts. The level of effectiveness was 82.76 (very effective), practicality was 82.29 (practical), and students' response score was 75.78 (fairly good). These findings suggest that the application developed with MIT App Inventor can serve as a valid, effective, and practical medium for supporting students' conceptual understanding in mathematics learning. This study contributes by providing an empirically validated development framework and practical reference for integrating MIT App Inventor-based applications into junior high school mathematics instruction to enhance conceptual understanding.

How to Cite:

Wijaya, A. S. (2025). Designing a MIT App Inventor-based mathematics learning application to enhance students' conceptual understanding: A development study. *Pi-Radian Journal*, 3(2), 89-106.

INTRODUCTION

With The rapid advancement of technology has significantly influenced people of all ages, including students, with smartphones emerging as one of the most impactful innovations (Hidayatuladkia et al., 2021). The increasing sophistication of smartphones has led to a growing number of users, particularly among students (Retalia et al., 2022; Astuti et al., 2017). This development creates opportunities for integrating technology-based education. However, in practice, many students still use smartphones primarily for social media and gaming rather than for educational purposes (Zulfa & Mujazi, 2022).

In the era of the Industrial Revolution 4.0, mathematics and technology have become inseparable, as mathematics has long been associated with technological development (Sugilar, 2020). Nevertheless, conventional teaching methods often make students less motivated to learn, despite their exposure to advanced technology (Pamungkas & Dwiyoogo, 2022). Technology-supported learning, such as through computers or Android-based applications, provides new opportunities for teachers. Yet, some teachers still face difficulties due to limited technological skills or the perception that conventional methods are more practical (Astuti et al., 2017; Sugilar, 2020). In fact, technology can support teachers in becoming more creative and engaging in their instructional practices (Suminar, 2019).

The integration of technology in education aims to support lifelong learning (Abachi & Muhammad, 2014). Technology-based media enable independent learning, enhance student engagement, and make learning activities more effective (Jihad & Lasmanah, 2019). Moreover, multimedia features such as music, graphics, and videos can make learning more interactive and less monotonous (Rohman & Susilo, 2019). MIT App Inventor, a software tool for Android application development, provides opportunities to design interactive mathematics learning applications that improve conceptual understanding and student motivation (Nurhaliza, 2022).

The need for such media is evident in mathematics education, where the lack of technology-based instructional tools often leads to low conceptual understanding among students. Traditional teaching without visual or interactive support limits students' ability to develop their mathematical reasoning and visualization (Heswari et al., 2022). By contrast, Android-based applications can provide accessible, engaging, and motivating resources that encourage students to focus and succeed in mathematics learning (Ardiansyah & Nana, 2020).

Among the mathematical competencies, conceptual understanding is fundamental because it serves as the foundation for reasoning, communication, problem-solving, and making connections (Nurrohim & Kariadinata, 2022). Understanding concepts is more valuable than rote memorization as it allows deeper and more practical comprehension (Marwati et al., 2020). Teachers play a crucial role as facilitators to create engaging learning experiences (Hidayat, 2018). By fostering an environment that emphasizes both conceptual and procedural knowledge, educators can significantly enhance students' mathematical understanding and application in real-world scenarios (Hussein, 2022). Therefore, this study seeks to develop an Android-based mathematics learning application using MIT App Inventor with the primary aim of enhancing students' conceptual understanding in mathematics.

METHOD

The research method employed in this study is Research and Development (R&D) using the ADDIE model, which consists of five systematic stages: Analysis, Design, Development, Implementation, and Evaluation (Branch, 2009). This model provides a structured framework for developing and validating educational products. In line with Sugiyono (2013), the R&D process involves not only the creation of the product but also rigorous testing to ensure its validity, practicality, and effectiveness.

The analysis stage involves identifying the learning problems, student needs, and curriculum requirements, particularly the lack of technology-based mathematics learning media. The design stage focuses on planning the structure and features of the Android-based learning application using MIT App Inventor. The development stage includes the actual creation of the application, followed by expert validation by material and media specialists. The implementation stage involves testing the product with students in a real classroom setting to measure its feasibility and effectiveness. Finally, the evaluation stage is conducted to assess the overall quality of the product and make necessary revisions for improvement. The sequential stages of the ADDIE model used in this research are illustrated in figure 1 below.

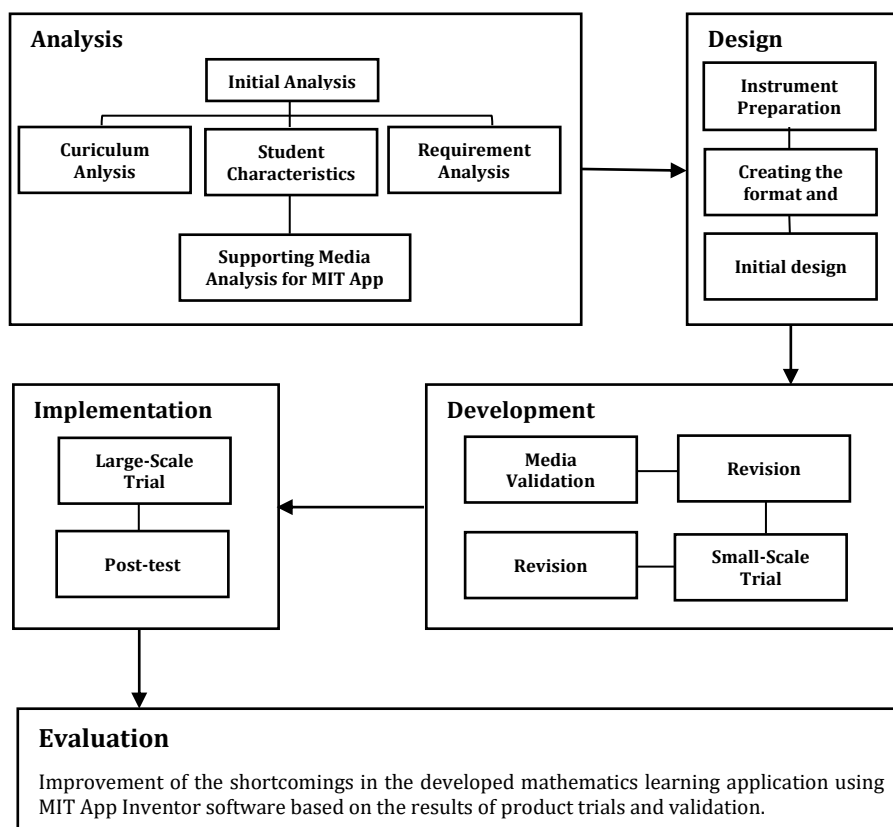


Figure 1. Stages of the ADDIE development model

Based on Figure 1, the development process of the mathematics learning application using MIT App Inventor follows the ADDIE model, which consists of five stages. The analysis stage includes curriculum analysis, student characteristics analysis, needs analysis, and analysis of supporting software used in multimedia development. The design stage involves selecting the appropriate media and format, creating a storyboard

or initial design, and preparing research instruments to measure students' conceptual understanding in mathematics. The development stage covers the creation of the learning application, small-scale trials, expert validation, and product revisions. The implementation stage consists of large-scale trials and administering post-tests to determine the practicality and effectiveness of the multimedia. The final stage, evaluation, involves improving the learning application based on the findings from the implementation stage.

The research instruments consist of test and non-test instruments. The test instrument includes questions designed to measure students' conceptual understanding of mathematics, consisting of 10 multiple-choice items and 5 essay questions. The non-test instruments include validation sheets for media experts and subject matter experts, a practicality questionnaire, and a student response questionnaire. Expert validation was carried out to assess the feasibility of both content and technical aspects of the application, while the questionnaires were used to collect students' perceptions of the developed application.

This study employed both qualitative and quantitative descriptive analysis techniques. Qualitative data were obtained from expert feedback, suggestions, and comments for product improvement. Quantitative data were derived from expert scores, practicality ratings, student responses, and post-test results. These quantitative scores were then converted into predefined criteria to determine the validity, practicality, and effectiveness of the developed application.

To determine the validity and practicality of the mathematics learning application, the data were analyzed using the criteria presented in Table 1 and Table 2. These criteria serve as the basis for assessing the overall quality of the developed application, including its content accuracy, usability, and effectiveness in improving students' conceptual understanding of mathematics.

Table 1. Validity criteria

Validity Level (%)	Criteria
81.26 – 100.00	Very Valid
62.51 – 81.25	Valid
43.76 – 62.50	Less Valid
0.00 – 43.75	Not Valid

Source: (Riduwan, 2011)

Table 2. Practicality criteria

Practicality Level (%)	Criteria
86 – 100	Very Practical
76 – 85	Practical
60 – 75	Fairly Practical
55 – 59	Less Practical
≤ 54	Very Less Practical

Source: (Riduwan, 2011)

To determine the level of effectiveness and students' responses toward the use of the mathematics learning application developed with MIT App Inventor, the data were analyzed based on the criteria presented in Tables 3 and 4 below.

Table 3. Effectiveness criteria

Calculation Score (Ef)	Category
$0 \leq Ef \leq 20$	Not Effective
$21 \leq Ef \leq 40$	Less Effective
$41 \leq Ef \leq 60$	Fairly Effective
$61 \leq Ef \leq 80$	Effective
$81 \leq Ef \leq 100$	Very Effective

Table 4. Criteria for students' responses

Achievement Score (Sp)	Category
$76 \leq Sp \leq 100$	Good
$50 \leq Sp < 76$	Fairly Good
$26 \leq Sp < 50$	Poor
$0 \leq Sp < 26$	Very Poor

Source: (Syafudin & Sujarwo, 2019)

RESULTS AND DISCUSSION

The Process of Developing a Mathematics Learning Application Using MIT App Inventor to Enhance Students' Conceptual Understanding. The development of a mathematics learning application using MIT App Inventor aims to significantly improve students' conceptual understanding by providing interactive and engaging learning experiences tailored to their needs.



Table 5. Development stages based on the addie model

No.	Development Stage	Aspect	Date of Implementation	Remarks
1	Analysis	Curriculum Analysis	March 21, 2023	√
		Student Characteristics Analysis		
		Needs Analysis		
		Media Analysis		
2	Design	Storyboard	April 2023	√
3	Development	Media Validation	May 11, 2023	√
		Material Validation	May 15, 2023	
		Product Revision	June 13, 2023	
4	Implementation	Small-Scale Trial	May 12, 2023	√
		Large-Scale Trial	May 15, 2023	
			May 22, 2023	
5	Evaluation	Data analysis of validity, effectiveness, practicality, and responses	June – July 2023	√

The research and development model employed in this study was the ADDIE model, which consists of the following stages: Analysis, Design, Development, Implementation, and Evaluation. In the Analysis stage, the researcher conducted a preliminary study and interviews with one of the mathematics teachers to obtain initial data. This stage included the analysis of student characteristics, curriculum analysis, needs analysis, and analysis of supporting software required in the development of the mathematics learning application using MIT App Inventor.

In the Design stage, the researcher determined the content to be included in the mathematics learning application, which involved preparing instruments, selecting media, choosing appropriate formats, and creating an initial draft. At this stage, the researcher encountered challenges in designing suitable content, as it required careful consideration to ensure that the application design was both engaging and relevant for instructional use. This process demanded a deep understanding of the mathematics material to be delivered and how it could be effectively integrated into classroom learning. Furthermore, another challenge was ensuring that the user interface of the application was easy to understand and operate, while maintaining interactivity to actively engage students. The creation of a storyboard was intended to provide a visual representation of the multimedia development process. An example of the storyboard is presented in Table 6 below.

Table 6. Storyboard for mathematics learning application using mit app inventor

Scene Title	Scene 1 of 12	Information
Opening/Cover		The opening (cover) display of the mathematics learning application developed with MIT App Inventor. When the start button is clicked, it will directly navigate to the main menu page. When the exit button is clicked, the application will close.
Opening/Cover		After the opening page, the initial menu screen appears, consisting of main menu, learning objectives, and about application features.
Main Menu	Scene 3 of 12	Information







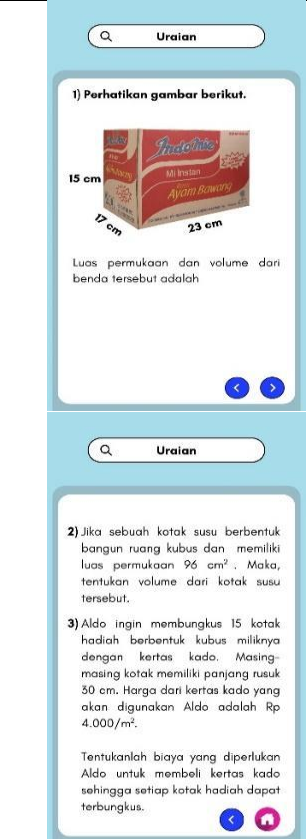
The main menu contains features such as learning materials on three-dimensional shapes (cube and rectangular prism), instructional videos, student exercises, and guidance on how to use the application.

After the storyboard was designed, the development of the mathematics learning application using MIT App Inventor was carried out. Once the multimedia product was completed, an expert validation process was conducted. The purpose of this validation was to assess the feasibility of the developed application. Two experts were involved in the process: a media expert and a subject-matter expert. The evaluation results from these validators served as guidelines for revisions to ensure the production of a feasible learning medium. In the first stage of media validation, the media expert provided a feasibility score of 57.50%, with the conclusion that the application could be used after revisions were made. In the second stage, following improvements, the media expert awarded a feasibility score of 83.5%, indicating that the mathematics learning application developed with MIT App Inventor was considered feasible for use. Meanwhile, subject-matter validation was carried out once and resulted in a feasibility score of 86.33%, which falls into the “very valid” category.

The subject-matter expert suggested adding sample questions along with their explanations to enhance the quality of the learning content. The refinements made to the application, based on suggestions from both the media and subject-matter experts, are summarized in table 7. These results indicate that the mathematics learning application developed with MIT App Inventor meets the validity and feasibility criteria required for classroom implementation.

Table 7. Product revisions based on suggestions from media experts

No.	Before Revision	After Revision	Information
1			This feature was added to help students understand the flow of the mathematics learning application developed.

No.	Before Revision	After Revision	Information
2			<p>This feature was added to provide students with an initial understanding of the concepts of three-dimensional solid figures.</p>
3			<p>This feature was included to provide students with additional references and make learning more engaging and enjoyable.</p>
4	<p>Not yet included</p>		<p>This feature was included to train students' critical thinking and the application of mathematical concepts in real-world contexts.</p>

At the implementation stage, the product testing was carried out in two phases: small-scale and large-scale trials. The small-scale trial was conducted with 10 students working independently for one day on May 11, 2023. Afterward, students were given a practicality questionnaire, resulting in a score of 81.07, which falls into the practical category. The large-scale trial was held on Monday, May 15, 2023, in class VIII-A and continued independently on May 17 and May 22, 2023. After the large-scale implementation, data were obtained in the form of practicality questionnaire scores and post-test results to measure the effectiveness of the media. The results showed: effectiveness at 82.76 (very effective), practicality at 82.29 (practical), and student responses at 75.78 (fairly good).

The evaluation stage involved analyzing these results, which served as the basis for determining whether further revisions were needed. Based on the phases of analysis, design, development, and implementation, the evaluation results indicate that the mathematics learning application developed with MIT App Inventor meets the criteria of validity, effectiveness, and practicality, and therefore does not require additional revisions. The validation analysis of the learning media was conducted twice, namely before and after the small-scale trial, while the material validation was carried out once. The validation of this mathematics learning application involved two experts: one media expert and one subject-matter expert. The results of the first media validation are presented in table 8, while the results of the second media validation are shown in table 9.

Table 8. Analysis of first-stage media expert validation

Aspect	Indicator	Score	Result
Display	The appearance of the mathematics learning application developed using MIT App Inventor software is attractive	3	50
	The suitability between the presented images and the discussed material	2	
	Color combination harmony in the media	2	
	Ease of entering and exiting the application	3	
Media Selection	Relevance to the learning objectives for Grade VIII junior high school students	3	60
	Ease of use of the learning media	3	
Media Utilization	Availability of application usage instructions that are easy to understand and practice by Grade VIII junior high school students	3	60
Learning Activity Effectiveness	Presentation of the mathematics learning application that encourages student engagement in learning	3	60
	Helps students learn anytime and anywhere	3	
	The animations and simulations are sufficiently engaging	3	
	The media can increase students' interest in learning mathematics	3	

The application-based learning media can enhance students' learning motivation	3
Overall Average	57,5
Criteria	Less Valid

Based on Table 8, the overall feasibility score from the first-stage media expert validation was 57.5, which falls into the less valid category. Following the first validation, the validator provided several suggestions for improving the mathematics learning application developed with MIT App Inventor, including: 1) Adding clear user instructions for navigating the application. 2) Incorporating non-routine questions in the student practice section. 3) Integrating math challenge videos in the learning video section. After revisions were made according to these recommendations, the second-stage media expert validation was conducted. The results of this validation are presented in table 9 below.

Table 9. Second-stage media expert validation analysis

Aspect	Indicator	Score	Result
Display	The appearance of the mathematics learning application developed using MIT App Inventor software is attractive	4	90
	The suitability between the presented images and the discussed material	4	
	Color combination harmony in the media	5	
	Ease of entering and exiting the application	5	
Media Selection	Relevance to the learning objectives for Grade VIII junior high school students	4	80
Media Utilization	Ease of use of the learning media	4	80
	Availability of application usage instructions that are easy to understand and practice by Grade VIII junior high school students	4	
Learning Activity Effectiveness	Presentation of the mathematics learning application that encourages student engagement in learning	4	84
	Helps students learn anytime and anywhere	5	
	The animations and simulations are sufficiently engaging	4	
	The media can increase students' interest in learning mathematics	4	
	The application-based learning media can enhance students' learning motivation	4	
Overall Average			83,5
Criteria			Very Valid

Based on table 9, the overall assessment results from the media expert reached a score of 83.5, which falls into the very valid category. Therefore, further validation with the media expert was deemed unnecessary, as the mathematics learning application developed using MIT App Inventor had already met the criteria for strong validity.

The next stage was the validation conducted by the material expert. This validation aimed to evaluate the content accuracy, the appropriateness of the mathematical concepts presented, the clarity of the material delivery, and its alignment with the curriculum requirements. Feedback from the material expert was essential to ensure that the developed application did not merely function well as a medium, but also provided conceptually sound and pedagogically effective mathematics content. The assessment results from the material expert regarding the developed mathematics learning application are presented in table 10 below.

Table 10. Analysis of material expert validation

Aspects	Indicators	Score	Result
Concept Accuracy	Alignment of the material with basic competencies	5	95
	Alignment of the material with learning indicators	5	
	Alignment of the material with learning objectives	5	
Material Organization	Student interactivity with the media	4	84
	Relevance and timeliness of the presented material	4	
	Adequacy of vocabulary quantity	4	
	Completeness of vocabulary coverage	4	
	Vocabulary difficulty level appropriate to the material	4	
	Depth of vocabulary in accordance with the material	4	
	Ease of learning for comprehension	4	
	Vocabulary language that is easy to understand	5	
	Clarity of learning instructions	5	
	Accuracy of vocabulary based on theories and concepts	4	
Implementation Feasibility	Appropriateness of vocabulary usage	4	80
	Encouragement of learning motivation	4	
Overall Average Criteria	Provision of feedback on evaluation results	4	86,33 Very Valid

Based on table 10, the percentage of all assessment aspects from the material expert was 86.33, which falls into the very valid category. Therefore, no further validation was deemed necessary, as the developed multimedia had already achieved a very valid

criterion. Consequently, considering the results of both media and material expert validations, it can be concluded that the mathematics learning application developed using MIT App Inventor has an overall validity level categorized as valid, with an average total score of 78.41.

This outcome can be attributed to the successful implementation of all stages in the ADDIE model during the development process of the mathematics learning application with MIT App Inventor. This finding aligns with Pawana et al. (2016:7), who stated that research and development using the ADDIE model can produce a final product in the form of technology-based learning media, developed in accordance with the appropriate procedures, thereby yielding products that are suitable for student use.

The effectiveness test results of the developed mathematics learning application were obtained through post-test scores, which had to meet the Minimum Mastery Criteria (KKM) of 70.00, administered to 29 students. The results are presented in table 11 below.

Table 11. Effectiveness score analysis

Category	Number	Score (%)
Students Achieving Mastery	24	82.76
Students Not Achieving Mastery	5	17.24
Total Students	29	100
Criteria		Very Effective

Based on Table 10, it was found that out of 29 students who participated in the post-test, 5 students did not achieve mastery. Thus, the number of students who achieved mastery was interpreted into an effectiveness score of 82.76%, which falls under the highly effective category, while the students who did not achieve mastery were interpreted into a score of 17.24%. This result occurred because students were actively engaged and had the opportunity to re-learn and deepen their understanding of the concepts of three-dimensional shapes, specifically cubes and rectangular prisms. This finding is supported by Aulia et al. (2022: 9), who stated that Android-based mathematics learning media developed using MIT App Inventor can foster students' learning independence and have a positive and significant effect on their conceptual understanding of mathematics.

The practicality questionnaire was filled out by students after completing the learning process using the media during both small-scale and large-scale trials. The analysis of the results of the practicality questionnaire in the small-scale trial, which involved 10 students, is presented in table 12.

Table 12. Practicality analysis of the product in a small-scale trial

No.	Aspect	Score	Criteria
1	Ease of Use	80.71	Practical
2	Attractiveness of Content	80.83	Practical
3	Usefulness	81.66	Practical
	Overall Score	81.07	Practical

Based on the results of the practicality questionnaire analysis in the small-scale trial, it was found that the practicality score of the mathematics learning application from the students was 81.07, which falls into the practical category. Furthermore, the results of the practicality questionnaire analysis in the large-scale trial, which involved 29 eighth-grade students from one class at SMP Negeri 24 Bandung, are presented in Table 13 below.

Table 13. Analysis of product practicality on a large scale

No.	Aspect	Score	Criteria
1	Ease of Use	84.23	Practical
2	Attractiveness of Content	80.17	Practical
3	Usefulness	82.47	Practical
Overall Score		82.29	Practical

The results of the practicality assessment show that the overall score of the mathematics learning application developed with MIT App Inventor in the large-scale trial was 82.29, which falls into the practical category. This indicates that the product is efficient for use as a learning medium. Furthermore, the average practicality score from both small- and large-scale trials was 81.68, also categorized as practical. This finding is consistent with Arsyad in Batubara (2020: 13), who emphasizes that learning media can simplify and clarify abstract material while enhancing imagination and attracting students' attention. Similarly, Dayton in Firmadani (2020: 95) highlights that learning media offer practical benefits, such as clearer, more engaging, and interactive material delivery, along with flexibility in time and place of use.

The student response questionnaire was designed to assess the quality of the developed mathematics learning application from the learners' perspective. The questionnaire contained 20 statements and was completed by students after finishing the learning session with the product during the large-scale trial. The analysis results of student responses in the large-scale trial, involving 29 students of Grade VIII (A) at SMP Negeri 24 Bandung, are presented in Table 14 below.

Table 14. Analysis of student responses

No	Statement	Total	Max	Mean
1	Overall, I am satisfied with the ease of using this mathematics learning application developed with MIT App Inventor software.	97	116	83,62
2	The way to use this mathematics learning application is simple.	93	116	80,17
3	I can learn effectively using this mathematics learning application.	94	116	81,03
4	I can learn quickly using this mathematics learning application.	90	116	77,59
5	I can study efficiently using this mathematics learning application.	87	116	75
6	I feel comfortable using this mathematics learning application.	97	116	83,62

7	This mathematics learning application is easy to learn.	95	116	81,9
8	I believe I am more productive by using this mathematics learning application.	85	116	73,28
9	This system provides clear help options and informs me how to operate the mathematics learning application.	92	116	79,31
10	The information provided by this learning application is clear.	92	116	79,31
11	I have difficulty using this mathematics learning application.	41	116	35,34
12	When using this mathematics learning application, I find it harder to understand the learning material.	51	116	43,97
13	It is very easy to find the information I need.	84	116	72,41
14	The information provided by this application is easy to understand.	91	116	78,45
15	This information is effective in helping me learn.	91	116	78,45
16	The layout of information displayed on the mathematics learning application screen is clear.	94	116	81,03
17	The interface of this mathematics learning application is pleasant.	93	116	80,17
18	I like using this type of mathematics learning application interface.	91	116	78,45
19	This mathematics learning application has all the functions and capabilities I need.	93	116	80,17
20	Overall, I am satisfied with this mathematics learning application.	107	116	92,24
Overall Mean Score				75.78
Criteria				Fairly Good

The analysis of student responses presented in Table 14 shows the score distribution for each statement related to the developed mathematics learning application, categorized into percentage-based criteria. This categorization was designed to identify how students' responses aligned with the expectations of the researcher. The overall score obtained from the student responses was 75.78, which falls under the category of fairly good.

The findings indicate that the students responded positively to the use of the developed MIT App Inventor Base mathematics learning application. This positive response suggests that such applications can effectively enhance students' engagement and understanding in mathematics learning environments (Amri et al., 2023). Moreover, the integration of visual learning technologies, such as those developed through MIT App Inventor, has been shown to significantly improve students' comprehension of mathematical concepts (Raiyn, 2016). Furthermore, the use of mobile applications in mathematics education has been shown to provide personalized pacing and immediate feedback, further enriching the learning experience (Berdiyrovna & Oktamovna, 2025). By leveraging these technologies, educators can better accommodate diverse learning profiles, ultimately

promoting inclusivity and engagement in mathematics classrooms (Ahmad et al., 2024). Additionally, the use of game-based learning applications has proven effective in motivating students and enhancing their understanding of mathematical concepts, bridging gaps in age and gender diversity in the classroom (Hsieh et al., 2025).

Students and teachers expressed that this was their first experience using an Android-based instructional media product in their school. This novelty contributed to the positive reception. The integration of Android-based media in educational settings has shown to enhance engagement and facilitate learning, as supported by recent studies highlighting its innovative nature (Hendrawaty, 2023). This trend reflects a broader shift towards digital literacy, where educators are increasingly required to adapt their teaching methods to incorporate technology effectively (Anurata, 2020). As a result, both students and teachers are gaining valuable skills that enhance their educational experiences in the digital age (Prasad et al., 2024). These results highlight that the application successfully gained favorable responses, demonstrating that the integration of the mathematics learning application into classroom practice was well received and provided meaningful learning experiences for students.

CONCLUSION

This study has resulted in the development of a mathematics learning application on the topic of three-dimensional shapes, specifically cubes and rectangular prisms. The findings lead to the conclusion that the application is valid, practical, and highly effective for use in the learning process. The validity assessment reached a score of 78.41, while the practicality evaluation by students resulted in 81.07% for the small-scale group and 82.29% for the large-scale group. These results confirm the quality of the developed learning application, which was designed following the stages of the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). Furthermore, the level of effectiveness demonstrated that the application achieved a score of 82.76, placing it in the highly effective category for mathematics learning. In addition, the students' responses to the use of the application yielded a score of 75.78, which falls into the fairly good category. Therefore, the mathematics learning application developed using MIT App Inventor is considered feasible and effective for classroom implementation. It supports both students and teachers in the teaching and learning process, ultimately helping to achieve the intended learning objectives.

ACKNOWLEDGMENTS

The author would like to express sincere gratitude to all parties who have supported the completion of this research and the development of the mathematics learning application using MIT App Inventor. Special appreciation is extended to the expert validators, both in the fields of media and subject matter, for their valuable input and constructive feedback that greatly contributed to the refinement of this product. The author is also deeply thankful to the teachers and students of SMP Negeri 24 Bandung for their active participation and cooperation during the implementation phase of the study. Their enthusiasm and honest feedback offered valuable insights into the application's effectiveness, and sincere thanks are extended to all who supported the successful completion of this research.

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