

Interactive Media of Additives and Addictive Substances Based on Android as an Effort to Increase Learning Motivation of SMP / MTs Students

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Abstract: The aims of this study were to: (1) create interactive learning materials based on Android; and (2) characterize the validity, practicality, and effectiveness of such materials in order to pique students' interest and boost their involvement in the material through engaging and interactive features. The five steps of the ADDIE model, which comprise research and development designs, are analysis, design, development, implementation, and evaluation. Both qualitative and quantitative descriptive data analysis was used in this study. With a percentage value of 92% (very valid), the results showed that the interactive learning media produced met the validity criteria. With a percentage value of 95.36% (very practical), the results of the field trial show that the interactive learning materials produced also meet the criteria of practicality. The trial findings show that interactive learning media increases students' learning motivation by fostering the drive and desire for achievement, supporting learning needs, creating a supportive learning environment, and fostering learning independence in the classroom. Based in these data, the conclusion that the outcomes of the interactive learning materials may be deemed valid, practical, and effective for use in the scientific teaching and learning process for class VIII SMP/MTs.

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Introduction

Indonesia is a nation that is thick with culture and language, but it is undeniable that Indonesia is also not spared from technological developments. Technological advances in the current era of globalisation are happening rapidly. Therefore, society must make a change in every aspect of its activities. The rapid development of technology affects many professions and groups (Kartini & Putra, 2020). Education is an industry that always needs progress, making education more developed, it must be able to keep up with technological developments (Kurniawan et al., 2024). Education is all learning opportunities that occur throughout a person's life in any environment or circumstances that encourage growth.

Looking at the current condition of Indonesia, more and more people are able to develop and create innovations in the field of technology, so there should be no more obstacles not to create and innovate (Fredlina et al., 2021). Learning innovation can be done through the application of strategies, methods, and the use of creative teaching materials and media. In line with research findings (Fauziah, 2020), the importance of using effective

teaching strategies, media, infrastructure, evaluation tools, and facilities in the classroom to create a classroom atmosphere that is not boring for students.

Regulation of the Minister of Education and Culture Number 22 of 2016 which regulates the requirements of the primary and secondary education process, that "learning media is described as a learning property in the delivery of learning materials". Research results (Syamsunir & Agussalim, 2021) state that learning media used in the classroom can increase student interest and motivation, arouse students' passion and enthusiasm in participating in the learning process, and have a positive impact on students' psychology. This is also related to Permendikbud Number 65 of 2013, that "an important component in teaching and learning tips is presenting media to direct students in obtaining various learning experiences".

Along with technological sophistication, the development of learning media is increasingly diverse, one of which is based on the android operating system. Android is very rapidly developing and is also available for operating systems that run Linux, consisting of operating systems, middleware, and software, all of which are open source, facilitating the creation of new applications (Fernando, 2014). The results of research (Muyaroah & Fajartia, 2017) argue that android-based learning media has the advantage of interactive design both in terms of audio and visual. Learning resources in the form of android applications can increase students' enthusiasm for learning (Lubis & Ikhsan, 2015).

Based on the results of initial observations and interviews, SMP Negeri 1 Watang Pulu is one of the schools that is classified as superior and has supporting facilities in the teaching and learning process. However, some teachers, especially those teaching science subjects, are less proficient in using technology to improve the learning process. Based on some student responses during the teaching and learning process that the tendency to learn decreased and the understanding of the material taught was lacking, and the teaching materials used were limited to the use of printed books, so that student learning motivation decreased. In the learning process, students are more likely to like interactive learning media, where there are images, videos, and animations. For this reason, educators play an important role in designing interesting learning applications, educators must be able to design, develop, and utilise technology in making interactive learning media in order to support learning.

In this regard, it is necessary to present interactive teaching materials in learning, namely android-based learning media with the aim of making students more interested and increasing student involvement in learning. The results of research (Sam & Nurmayanti, 2021) corroborate this, that the use of learning media in the classroom makes students not feel bored because they get material beyond what they learn from the teacher's explanation, besides that students will also feel that the lessons given are more interesting, thus increasing learning motivation and resulting in high academic achievement.

One programme that makes it easy to create interactive media for android devices without the need for programming knowledge is smart apps creator (SAC). This software naturally makes it easy for educators to create their own apps. According to (Azizah, 2020), SAC is an application that can be used to produce interactive learning materials. This is because SAC offers strong support for technology-based learning, so it can be integrated with laptops, android devices, PCs, and projectors. An easy interactive learning media maker software combined with animation, audio and video is the SAC application (Syahputra & Prisma, 2021). Interactive learning media is then packaged by utilising the SAC application, which has interesting features that support the development of interactive teaching materials. In addition, learning media packaged using SAC can be accessed offline

so that it does not cost a lot of money, and can increase student learning because it is flexible. With the use of interactive learning media using SAC, researchers hope that students will be able to operate SAC, and the acceptance of material as a whole to realise and achieve learning activities is expected. In line with the opinion (Amalia, 2022) when android-based media is packaged with the SAC application, students are more motivated to learn.

Research Method

The creation of interactive media which is the focus of this research is research and development (R&D) research with the ADDIE research model (analysis, design, develop, implementation, and evaluation) (Astuti et al., 2017). Located at SMP Negeri 1 Watang Pulu, the subjects included 25 students of class VIII F who effectively participated in learning, as well as four validators, namely two media validators and two material validators. In this study, data were collected through observation and questionnaires, for data examination, qualitative and quantitative descriptive analyses were used.

Qualitative data analysis was conducted on testing the effectiveness of the developed android-based interactive learning media. The method of examining subjective information can be completed with the three phases of the Miles and Huberman model (Winarni, 2021), specifically: (1) data reduction, summarising and selecting significant focus, and focusing on perceptual information, (2) data presentation, more specifically perceptual information is summarised in the form of brief descriptions, outlines, relationships between classifications, and so on. (3) conclusion, specifically the perceptual information is introduced in a story structure which is the final result or new discovery. Table 1 shows the observation instrument sheet.

Table 1: Observation instrument

No	Indicators
1	The existence of high enthusiasm to achieve goals
2	Support for learning needs
3	Fun learning conditions
4	Independence in the learning process

Source: (Umairah & Zulfah, 2020)

Quantitative analysis to analyse the validity data and practicality data of the developed interactive learning media. To determine the percentage of validation and practicality of interactive learning media, the formula was used:

$$Percentage = \frac{\sum x}{SMI} \times 100 \%$$

(Tegeh et al., 2014)

Description:

$\sum x$ = Number of scores

SMI = Ideal Maximum Score

100% = Constant

Based on the percentage results of media and material validation assessments, the determination of validation conclusions can be seen based on the criteria in table 2, while practicality can be seen based on table 3.

Table 2. Validity Criteria

Criterion	Level of Validity	Information
81,00% - 100,00%	Very Valid	Requires no improvement for use
61,00% - 80,00%	Valid	Requires minor repairs to make it usable
41,00% - 60,00%	Less Valid	As it requires major repairs, it is recommended not to be used
21,00% - 40,00%	Invalid	Not for use
0,00% - 20,00%	Highly Valid	Not for use

Source: (Wandani & Nasution, 2017)

Table 3. Practicality Criteria

Criterion	Level of Practicality	Information
81,00% - 100,00%	Very Practical	Requires no improvement for use
61,00% - 80,00%	Practical	Requires minor repairs to make it usable
41,00% - 60,00%	Less Practical	As it requires major repairs, it is recommended not to be used
21,00% - 40,00%	Impractical	Not for use
0,00% - 20,00%	Highly impractical	Not for use

Source: (Wandani & Nasution, 2017)

Research Resul and Discussion

Results of Interactive Learning Media Product Development

The SAC programme is used in designing the results of media product development that allows users to access offline. The following is the appearance of the developed media product.



Figure 1. Opening Page

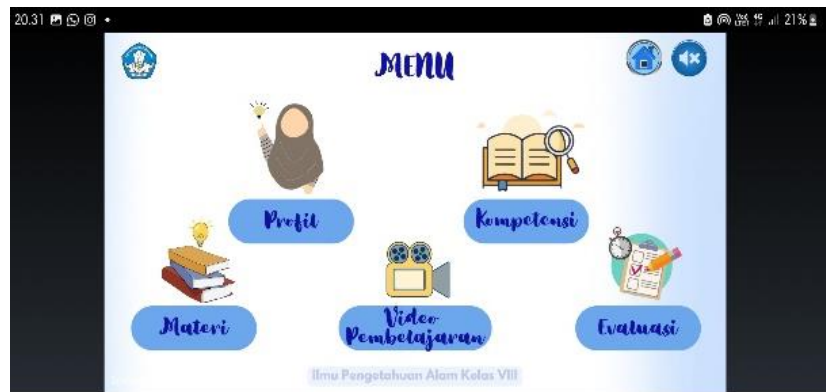


Figure 2. Main Menu Page



Figure 3. Creator Profile Page



Figure 4. Competence page



Figure 5. Material Page



Figure 6. Evaluation page



Figure 7. Learning Video Page

Validation Test Results

Before starting the product trial, at this stage researchers used two media validators and two material validators. Table 4 displays the calculation of the assessment made by the validators.

Table 4. Validation Test Results

No	Validator	Expert	Percentage	Category
1	Validator 1	Media	85,88%	Very Valid
2	Validator 2	Media	98,82%	Very Valid
Media Validation Average			92,35%	Very Valid
3	Validator 3	Material	88,33%	Very Valid
4	Validator 4	Material	95%	Very Valid
Material Validation Average			91,66%	Very Valid
Overall Average			92%	Very Valid

The presentation of the results of the media validator's evaluation of the developed product is seen from table 4, based on several indicators, namely appearance, font/typography, presentation, and interactive. The media is considered very valid, with a percentage value of 92.35%. With minor improvements, the evaluated product is considered suitable for use. The media validator's response to the developed product is that it needs a little improvement but can be used.

The results of the material validator's evaluation of the product developed based on several indicators, namely material/content, learning, language, and evaluation. The media is considered very valid with a percentage value of 91.66%. The assessed product is declared suitable for use without revision. The material validator's response to the developed product is (1) to increase student involvement, the use of media in the learning process is very interesting, (2) very good, but still needs to be improved.

The results of the validity analysis, namely the combination of data from the media and material validation test results as a whole, get an average percentage value of 92% with the criteria "very valid".

Practicality Test Results

The products that have been developed, together with the subjects, namely science teachers and students, are tested at this stage by researchers. To determine the results of practicality, researchers gave questionnaires to teachers and students to measure how practical the media was. Table 5 displays the calculation of the assessment made by the respondents.

Table 5. Practicality Test Results

No	Responden	Percentage	Category
1.	Teacher	96,66%	Very Practical
2.	Students	94,06%	Very Practical
Average		95,36%	Very Practical

Table 5 presents the results of the questionnaire analysis of teachers' responses to the developed product based on the indicators of material/content, media, language, and evaluation. The media is considered very practical with a percentage value of 96.66%. The teacher's response to the developed product is that the software is interesting and easy to understand because it has several pictures so that students are interested in following the learning process.

The results of the questionnaire analysis of students' responses to the products developed based on indicators, namely material / content. The media is considered very practical with a percentage value of 94.06%. Students' responses to the developed product are (1) the media works well (2) very practical (3) the letters used are very clear, (4) the material is easy to understand (4) the media display is attractive (5) images, audio, and video are very interesting.

The results of the practicality analysis which is a combination of the results of the analysis of teacher and student responses get an average percentage value of 95.36% with the criteria "very practical" used in the learning process.

Effectiveness Test Results

When conducting trials of android-based interactive learning media, researchers made observations during the learning process to see how effective the use of learning media that had been developed was. Table 6 displays the effectiveness analysis assessment.

Table 6: Effectiveness Analysis Results

No	Indicators	Description
1	The existence of high enthusiasm to achieve goals	In the learning process using interactive media based on android, most students are able to do the task thoroughly and on time as evidenced by the attitude of students who pay attention and take notes on learning materials.
2	Support for learning needs	Interesting and concise materials can gather inspiration for substitutes to be more dynamic and linked to experiences that instruct and grow.
3	Fun learning conditions	The presence of android-based interactive learning media supported by various interesting features in the form of images, audio and video from learning media makes students comfortable and interested so that the learning atmosphere runs well and conducive.
4	Independence in the learning process	Learning is more efficient after the use of interactive learning media, because it can facilitate students in learning where each student is able to access learning media anywhere and anytime.

Table 6 shows that high enthusiasm to achieve goals, support for learning needs, pleasant learning conditions, and independence in the learning process are factors that increase learning motivation through interactive learning media.

Conclusion

SAC is utilised in developing android-based interactive learning media through the stages of the ADDIE model (analyse, design, development, implementation, and evaluation). The results of media validators with a percentage of 92.35% and material validators with a percentage of 91.66% and an average percentage of 92% with "very valid" criteria indicate that the products developed are suitable for use during the teaching and learning process. Based on the responses of teachers and students to the questionnaire, the practicality analysis obtained an average result of 95.36% including the criteria of "very practical". The existence of high enthusiasm to achieve goals, support for learning needs, pleasant learning conditions, and independence in the learning process, as observed by researcher observers regarding the effective use of learning media. Future researchers are expected to be more creative in designing interactive learning media, and include practical videos related to additives and additive substances.

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