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Development of android-based gamification for hikayat text learning

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Development of android-based gamification for hikayat text learning

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KEYWORD

ABSTRACT

Research on the use of learning media has great significance in helping teachers and students overcome learning challenges. The latest innovation in this research is the development of Android-based gamification learning media targeted at high school grade X students in learning Indonesian hikayat text. The research aims to analyze the need for learning media for teachers and students, and develop the media. The research method used is research and development with a modified approach from Borg & Gall adapted by Sugiyono. Data were collected through interviews, questionnaires, observation, and documentation, with product validation by three experts. The subjects of this research were teachers and students from SMAN 1 Kalasan, Sleman, Yogyakarta. The results of the needs analysis showed the need for learning media that is more interesting, interactive, and in accordance with current technology. Meanwhile, the evaluation results of the Android-based gamification media showed positive responses from teachers and students, with increased student engagement and effectiveness of material delivery by teachers, as well as students' interest in learning and better understanding of hikayat text.

Introduction

Education today is increasingly influenced by the development of information and communication technology. The use of digital learning media, such as Android-based applications, has become one of the attractive alternatives in improving learning effectiveness (Dewi et al., 2020; Yaniaja et al., 2021). In the context of learning Indonesian language and literature, the development of innovative learning media is an urgent need, especially in the material of hikayat text.

Hikayat or saga text is a form of traditional Indonesian literature that has high historical, cultural, and literary values. However, in practice, learning hikayat text is often faced with challenges, both for teachers and students (Astawa & Dewi, 2021; Octafiani et al., 2017; Permata & Kristanto, 2020). The limitations of conventional learning media are often unable to attract students' interest and the lack of interactivity in delivering the material.

In overcoming these problems, the concept of gamification or the use of game elements in learning becomes an interesting solution (Yunita & Indrajit, 2022; Oktaviana & Diana, 2023). However, research that specifically develops Android-based gamification learning media for learning hikayat text is still limited. Therefore, this research was initiated to fill this knowledge gap and answer the need for innovative learning media in learning saga texts (Mustikasari et al., 2023; Octafiani et al., 2017).

By introducing a gamification approach in learning hikayat text through an Android-based application, it is expected to increase students' motivation and engagement in understanding and appreciating Indonesian literature (Areed et al., 2021; Shaliha & Fakhzikril, 2022). The rationale of this research is to expand the scope of available learning media, provide a more interesting and interactive alternative for teachers and students, and present a concrete solution in overcoming challenges in learning hikayat texts (Imbar et al., 2023; Setiana & Hansun, 2017; Talingdan & Llanda, 2019).

This research demonstrates that the Android-based gamification concept in Indonesian language learning is an approach that integrates gaming elements into the learning process to enhance student engagement and motivation (Kirana et al., 2022; Mukarromah & Agustina, 2021; Sudana et al., 2021). By utilizing specialized applications or learning media specifically designed for this purpose, students can easily access learning materials through their mobile devices (Bicen & Kocakoyun, 2017; Bihanda et al., 2022). Features such as missions, achievements, reward systems, leaderboards, and interactive challenges are implemented to create an engaging and enjoyable learning experience. Through this gamification concept, students can earn rewards for their achievements, participate in presented challenges, and compete with their peers, thereby enhancing their learning motivation (Dirgantara et al., 2019; Qohar et al., 2021; Sagirani et al., 2018).

Nevertheless, this research also has several limitations that need to be considered. One of them is the limitation in technology accessibility possessed by some students, which can reduce the effectiveness of implementing this gamification concept. Additionally, the role of teachers in facilitating the use of this application can also be a determining factor in the success of the learning process. There are also challenges in developing content that aligns with the curriculum and students' learning needs.

However, the presence of this research brings new hope to Indonesian language learning. By utilizing an Android-based application that implements the gamification concept, it is hoped that Indonesian language learning will become more interactive, engaging, and effective in facilitating understanding and appreciation of Indonesian literature and culture.It is hoped that the use of an Android-based application that applies the gamification concept will make Indonesian language learning more interactive, interesting, and effective in facilitating understanding and appreciation of Indonesian literature and culture.

Hikayat text is a form of traditional Indonesian literature that is characterized by a long and complex narrative or story (Harjono et al., 2023; Rahmi et al., 2020). Usually, hikayat texts contain stories about adventures, romantic stories, or legends that are often connected with cultural and moral values. Another characteristic of hikayat texts is the use of distinctive language and archaic terms that may require additional explanation for modern readers (Haryanti et al., 2022; Setyawan et al., 2021; Siregar et al., 2023). In addition, hikayat texts also often contain religious or mythological elements that are an important part of Indonesian culture. Famous works such as "Hikayat Raja-raja Pasai", "Hikayat Iskandar Zulkarnain", and "Hikayat Pohon Ganja" are some examples of hikayat texts that are widely known in Indonesia. Hikayat texts are an important part of Indonesia's literary and cultural heritage that needs to be studied and appreciated by the younger generation to enrich their understanding of Indonesian traditions and values (Hasminur et al., 2024; Herlina et al., 2019).

The purpose of this research is to develop Android-based gamification learning media that suits the needs of teachers and students in learning class X high school saga texts. This research aims to identify these needs, develop an application that implements the concept of gamification, and test the effectiveness of the application in increasing students' interest, engagement, and understanding of saga texts (Dewi et al., 2020; Ilham et al., 2023; Mustikasari et al., 2023). It is expected that this research can contribute to the development of innovative learning methods and concrete solutions to improve the quality of learning Indonesian language and literature.

Method

This study used the Borg & Gall research and development (R&D) method, which has been modified by Sugiyono(Sugiyono, 2019). This approach consists of ten steps, namely data collection, product planning, initial product development, initial product trial, initial product refinement, refined product trial, refined product refinement, refined product trial, refined product trial, refined product field test, and product dissemination.

This research was conducted at SMA Negeri 1 Kalasan for two years. This location was chosen for two reasons. First, it is a follow-up to the cooperation that has been carried out by SMA Negeri 1 Kalasan with the Indonesian Language and Literature Education Study Program, FKIP, UAD. Second, to improve the Indonesian language learning approach made with digital learning media. Grade X students at SMA Negeri 1 Kalasan were the subjects of this trial.

Data collection was conducted using questionnaires, observations, interviews, and document analysis. Meanwhile, data analysis techniques were carried out qualitatively and quantitatively, namely qualitative data analysis with three components: data reduction, data dislpay, conclusions; while quantitative data analysis was carried out by independent t-test to test the comparison of learning media. Non-independent t-test was used to compare pretest and post-test on android-based gamification learning media. Research flow design as viewed in Fig 1.
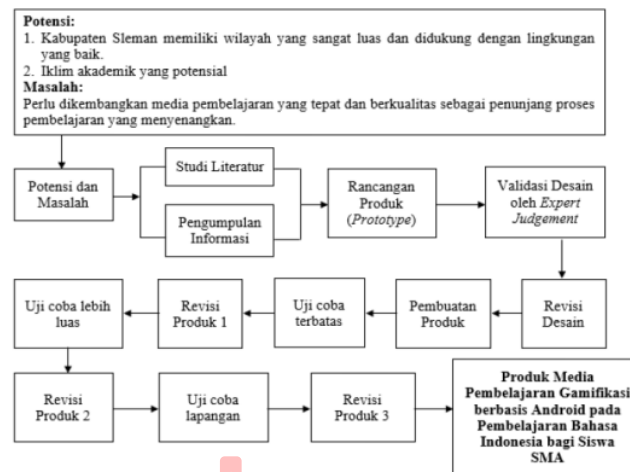
Fig 1. Research Flow Diagram

Results and Discussion

Needs analysis, learning objectives, and appropriate learning strategies are the starting point of learning. In order to achieve predetermined learning standards, empirical evidence is needed to evaluate the effectiveness of various processes such as learning, testing and revision. Learning development requires knowledge of how learners acquire information.

Basically, learning efforts serve as external stimuli that help individuals learn, organize new experiences, and integrate them into meaningful patterns, thus forming cognitive structures that facilitate the transfer of information in the learning process. Factors such as student learning characteristics and internal variables play an important role in learning outcomes.

Gagne (1979) describes learning as an attempt to help someone learn. The concepts of learning and teaching are different and the focus of learning is on everything that directly affects a person's learning process. Learning does not necessarily involve an educator (teacher) directly, but can occur through various media such as print media, pictures, television, computers, and other learning resources. According to Gagne, Briggs, and Wagner, learning consists of a series of activities designed to support student learning. Learning components include learning objectives, materials, activities, and assessments.

Needs Analysis Stage

At the needs analysis stage, it is explained that efforts to improve the quality of learning are in accordance with the identified problems. Initially, the concept of android-based gamification learning media was initiated due to the Covid-19 pandemic which paralyzed the learning process in the classroom so that learning activities were carried out online. Currently, the situation at school has returned to normal and all activities at school are running as before. However, students' learning motivation has not fully recovered. The effect of online learning makes students become addicted to gadgets. Therefore, this android-based gamification learning media is designed to overcome students' boredom and increase their learning motivation again.

The needs analysis data was collected using questionnaires, interviews, document analysis, and observation. The results of the questionnaire were analyzed using descriptive analysis according to the results of respondents related to: (1) learning device analysis; (2) learning media analysis; and (3) learning material analysis. The following data were obtained in the needs analysis.

1. **Learning Device Analysis (RPP)**

The success of a learning process cannot be separated from learning planning. The learning syllabus is one of the references for the preparation of a learning tool. In this study, the learning tools analyzed were in the form of lesson plans (RPP) on KD 3.7 and 4.7 Hikayat Text material. The results of the lesson plan analysis are as follows.

a. The identity of the lesson plan is written in full, including: education unit, subject, grade/semester, subject matter, and time.

b. Includes the main minimum components consisting of eight components and supporting attachments, including: core competencies (KI); basic competencies (KD) and indicators of competency achievement (IPK); learning objectives; learning materials; learning methods; media/tools/learning materials and learning resources; learning steps; assessment of learning outcomes; and supporting attachments to the

Purwanti Zisca Diana, et.al (Development of android)

lesson plan in the form of learning materials, assessment instruments, etc.

c. Includes KI-1 (spiritual attitude), KI-2 (social attitude), KI-3 (knowledge), and KI-4 (skills).

d. Basic Competencies (KD) include knowledge (KD 3.7) and skills (KD 4.7).

e. Elaborate GPA based on KD from KI-3 (3.7.1 and 3.7.2), and KD from KI-4 (4.7.1). GPA is compiled using operational verbs that can be measured/assessed according to the characteristics of the subject (material).

f. The GPA of the knowledge KD describe cognitive process dimention and the skill KD contains concrete skills are presented in Table 1.

Table 1. The GPA of the Knowledge KD Describe Cognitive Process Dimention and the Skill KD Contains Concrete Skills

Basic Competencies	Competency Achievement Indicators
3.7 Identify the values and content contained in folklore (hikayat) both oral and written.	3.7.1 Identify the main points of the folklore / saga text (C1)
	3.7.2 Analyze the characteristics of folklore / saga texts (C4)
	3.7.3 Analyze the values contained in the folklore / saga text (C4)
4.7 Retell the content of folk stories (hikayat) heard and read.	4.7.1 Rewrite the content of folklore / saga texts that have been heard / read in their own language, both orally and in writing (C6)

Basic Competencies	Competency Achievement Indicators
3.10 Evaluate proposals, offers and agreements in oral and written negotiation texts.	3.10.1 Explain the purpose and characteristics of a negotiation text (C1).
	3.10.2 Analyze the determinants of success of negotiation text (C4)
	3.10.3 Determine the structural parts of a negotiation text (C4)
4.10 Express proposal, offer, agreement and closure in the text.	4.10.1 Identify speech pairs in a negotiation text (C2)
	4.10.2 Identify persuasive sentences in a negotiation text (C2)
	4.10.3 Analyze bidding and submission letters (C4)
	4.10.4 Presenting conclusions (C6)

g. The formulation of learning objectives reflects the achievement of attitudes, knowledge and skills competencies. In addition, it also contains ABCD aspects (*Audience, Behavior, Condition, Degree*).

h. Learning materials contain relevant facts, concepts/principles and procedures.

i. The learning methods used are relevant to active learning, namely *discovery learning* and*problem-based learning.*

j.   Active learning is applied which leads to the development of HOTS.

k.   The learning media used are *power point*, *google classroom* learning *platform*, and utilizing *google meet* and *whatsapp* groups.

l.   The learning resources used are multimodal, including: textbooks, scientific publication articles, and *YouTube* videos.

m.   Learning steps include introduction, core, and closing activities.

n.   Preliminary activities include conditioning students, religiosity activities or other character strengthening at the school level, apperception, delivery of learning objectives, activities andassessments that will be carried out.

o.   The core activities contain *active learning* using *discovery learning* and *problem-based learning* models; describing the stages of activities that are sequential and systematic (from LOTS to HOTS). However, it has not encouraged the development of 21st century life skills, namely critical thinking, creativity, collaboration, and communication in learning activities. Therefore, the application of the *problem-based learning* model has not been optimal.

p.   Closing activities include summary, conclusion, reflection, assessment and follow-up assessment, including providing character strengthening.

q.   Assessment of learning outcomes contains the design of the assessment; types/techniques of assessment, forms of assessment, instruments, and scoring guidelines; and includes assessment of knowledge, skills, and records of students' attitudes in the attitude assessment journal.

2. Learning Media Analysis

Learning media is used as a tool in learning activities so that the interaction process between educators and students can take place in an effective (Hamdani, 2011). Learning media serves as a tool in teaching created by educators according to the needs, circumstances, and the surrounding environment (Suryani et al., 2019). Learning media is also useful to make the learning process more interesting, can foster student motivation, clarify teaching materials so that the meaning is easily understood by students, and make the learning atmosphere more varied (Yaumi, 2019).

An educator must be able to choose the learning media to be used appropriately. The use and selection of learning media is adjusted to the material and learning objectives to be achieved. Anderson (in cite Wilson, 2016) categorizes nine types of learning media, including: audio, print, audio-print, silent visual projection, silent audio-visual projection, motion visual, physical objects, humans and the environment, and computer media (Nurdin & Andriantoni,

2019).

Currently, gamification learning media is starting to be developed as an effort to foster students' interest in learning (Dewi et al., 2020) and is considered as the right solution when learning online (Yaniaja et al., 2021). The use of gamification is expected to increase learners' interest in learning and they will no longer be bored due to the long learning process (Astawa & Dewi, 2021). The development of gamification is also expected to be favored by students because the application resembles a game that can be operated on Android, so that it can overcome students' online game addiction are presented ini Table 2.

Table 2. Gamification Design Process

No.	Stages	Design
1	Defining gamification goals	Gamification design is used to increase students' learning motivation, make the material easy to understand, and create a varied learning atmosphere.
2	Determine user attitude	Learning is presented in stages.
3	Define the gamification activity flow	Learning materials in the gamification flow will be presented gradually based on the level of difficulty to achieve competency achievement indicators.
4	Designing gamification design	Design gamification that is engaging and fun.
5	Select gamification elements and implement them	Apply gamification design to gamification elements.

Gamification learning media is developed in the use of android. Android is a platform that is equipped with tools in software through an open license that is free to develop applications (Prasetyo, 2017). Currently, almost all students from elementary school level have owned and are proficient in using the android system embedded in smartphones. This is due to conditions that require students to learn online. According to Satyaputra & Aritonang (Kuswanto & Radiansah, 2018) android is an operating system for smartphones and tablets.

The fame of this android application is due to the ease of use and speed to access the data needed, choosing a creative design that is easy to use, and can be relied upon to access all information (Adesti & Nurkholimah, 2020). Seeing the development of technology in this digital era, it is necessary in the field of education to develop learning media that suits the needs of students. The development of android-based gamification learning media is expected to increase students' learning motivation. The development of this android-based learning media departs from considerations: (a) can be used as an independent learning media for students, and (b) can be utilized by educators as a support for a fun learning process.

3. **Learning Material Analysis**

Based on the results of interviews with class X Indonesian language teachers at SMA Negeri 1 Kalasan which is a partner school in this study, it was found that the problems that arose in the material of saga texts and negotiation texts. In the hikayat text, the problem found

is that students have difficulty in understanding the meaning of the story because of the terms that are difficult to understand. Hikayat texts have different language styles and sentences from other literary works. Hikayat text is an old literary work in the form of prose in Malay which contains stories, stories, fairy tales, biographical, religious, or a combination of these characteristics.

In line with the above, in learning hikayat text, several activities will be carried out to make it easier for students to understand hikayat text. The activities are divided into five activities, including: a) determining the value of life in hikayat; b) explaining the intricacies of hikayat; c) identifying the intrinsic and extrinsic of hikayat; d) retelling the contents of hikayat; e) comparing hikayat and short story; and f) turning hikayat into short story.

In addition to the saga text material, students also encounter understanding problems in negotiation text material. Negotiation text is a form of social interaction that functions as a medium to reach an agreement between interested parties. In the negotiation text, activities will be carried out to provide solutions to students who have difficulties. The activities include: a) determining parts of negotiation text; b) identifying types of negotiation text; c) determining the presentation pattern of negotiation text; d) determining the structure of negotiation text; e) analyzing the language of negotiation text; and f) composing negotiation text.

Development Stage

In this development stage, product design is carried out until it becomes a gamification development product that is ready to be tested for the target. In this research, the school partner is SMA Negeri 1 Kalasan.

The following is the procedure for developing android-based gamification products on learning hikayat text for class X students at SMA Negeri 1 Kalasan.
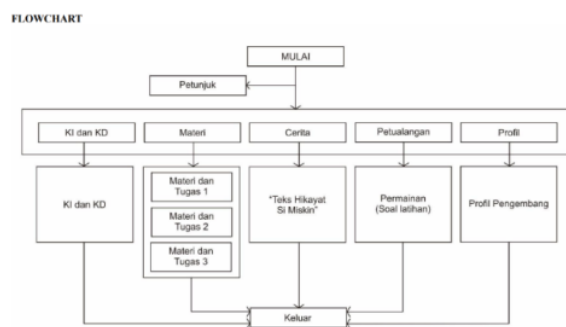
1. *Flowchart* Development in Fig 2.

Fig 2. Flowchart of gamification product design "Hikayat Text"

Purwanti Zisca Diana, et.al (Development of android)

2. *Storyboarding*

Storyboarding can be observed in Figure 3-7.
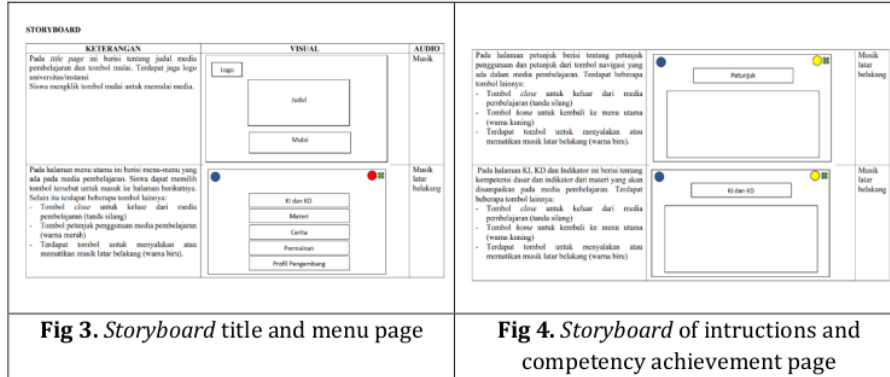

Fig 3. *Storyboard* title and menu page

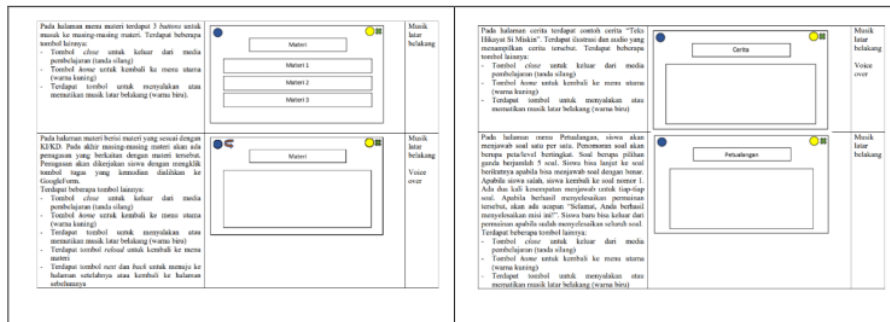**Fig 4.** *Storyboard* of intructions and competency achievement page

Fig 5. *Storyboard* of the material page
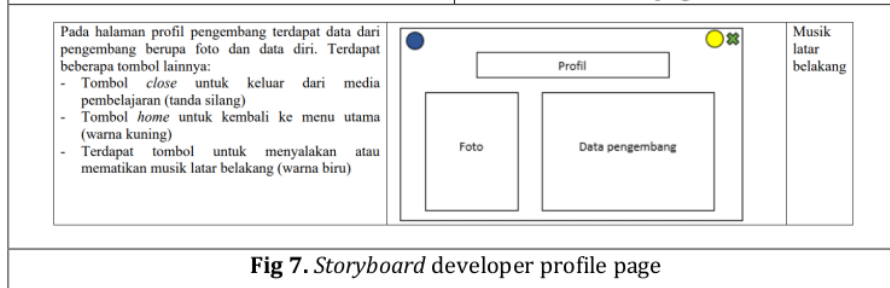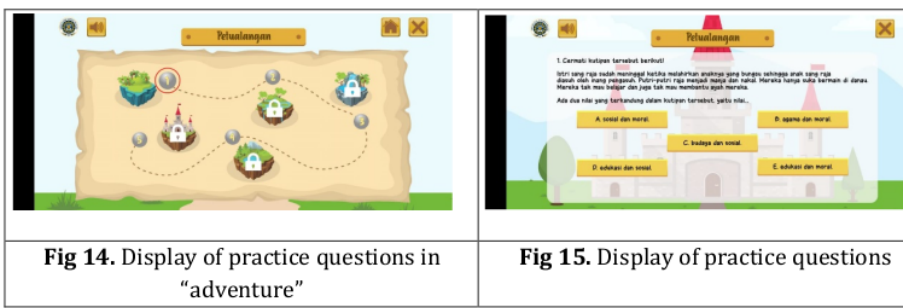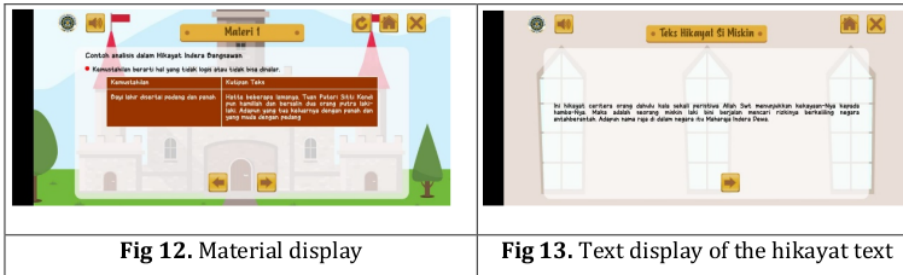
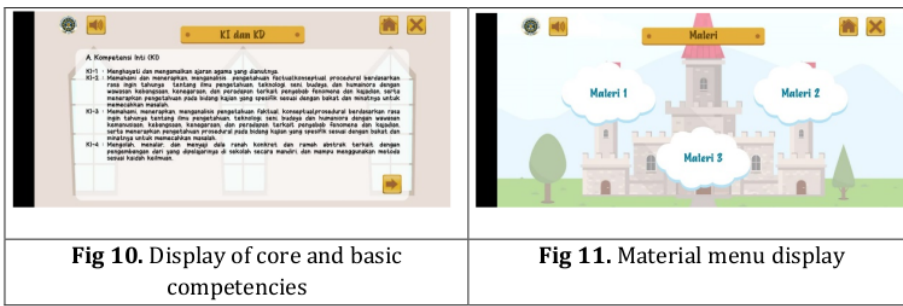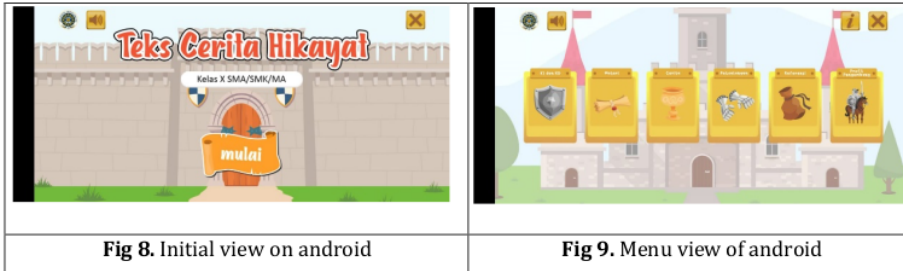**Fig 6.** *Storyboard* of story and adventure page

Fig 7. *Storyboard* developer profile page

3. Android-based Gamification Product Development for Indonesian Language Learning

Android-based gamification product can be observed in Figure 8-15.

Fig 8. Initial view on android	**Fig 9.** Menu view of android

Fig 10. Display of core and basic competencies	**Fig 11.** Material menu display

Fig 12. Material display	**Fig 13.** Text display of the hikayat text

Fig 14. Display of practice questions in "adventure"	**Fig 15.** Display of practice questions

Based on the results of the development of android-based gamification learning media on saga text material has significant potential in improving the quality of learning. This application is able to present saga text learning in an interactive and interesting way for students. By utilizing gamification elements such as challenges, points, and rewards, this application can stimulate students' interest in learning and improve their understanding of learning materials. In addition, the app's integration with the education curriculum ensures conformity with the set learning objectives.

From a technical point of view, the development of this application is considered feasible because it uses the Android platform which is popular and easily accessible to most smartphone users. A well-designed interface and intuitive navigation will make it easier for users to explore the various features presented in the application. Therefore, the development of this application is expected to make a positive contribution to the development of students' skills in understanding and analyzing the text of the saga (hikayat text).

In addition to the feasibility of the Android platform and the intuitive design of the application, this research also yields several findings. Firstly, Android-based applications have a broad reach, particularly in regions where Android devices are more prevalent than other operating systems, ensuring that a larger demographic of students can benefit from the learning resources provided by the application. Secondly, the flexibility of the Android platform enables developers to customize applications to suit specific educational needs, ensuring that gamification elements, learning content, and interactive features of the application are tailored to meet the unique requirements of learning saga texts. Thirdly, gamification has been recognized as an effective strategy for increasing student engagement and retention of learning material. By incorporating game elements such as missions, achievements, and rewards, the application can create a deeper and more enjoyable learning experience, thereby enhancing students' motivation to delve deeper into saga texts. Furthermore, the integration of analytics tools into Android-based applications allows educators to gather valuable data on student interactions and progress, enabling them to identify areas for improvement and adjust teaching strategies accordingly. Lastly, the integration of the application into classroom instruction serves as an additional resource for teachers to reinforce lesson concepts and provide additional practice opportunities for students, thereby enhancing the overall effectiveness of the learning experience and facilitating a blended learning approach. By considering these additional arguments, the research findings are further strengthened, emphasizing the potential of Android-based gamification applications to revolutionize the teaching and learning of saga texts in Indonesian language education.

Conclusion

This research successfully developed an Android-based gamification application for learning saga texts, overcoming the limitations of conventional learning media. This android-based gamification learning media is able to increase students' interest, engagement, and understanding of saga texts. The development results show that this application is pedagogically, technically, and economicallyfeasible, and has great potential to improve the quality of learning Indonesian language and literature through interactive and interesting learning experiences.

Declarations

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