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Gamification Method Based on Information Communication Technology (ICT) in Islamic and Muhammadiyah Learning

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ABSTRACT

This study focuses on the gamification method based on Information Communication and Technology (ICT) in Muhammadiyah learning at SMK Muhammadiyah 1 Purbalingga, Purbalingga Regency. This study addresses the challenges faced in Muhammadiyah learning. The aim is to examine the application of ICT-based gamification methods in Muhammadiyah learning, especially through quizzes using the Kahoot and Quizizz applications. In addition, this study also evaluates the feasibility of learning media based on assessments from material experts, media experts, and students. This study uses a Research and Development (R&D) approach with qualitative and quantitative data collection techniques. Qualitative data were obtained through questionnaires containing explanations and suggestions from material experts and media experts. Quantitative data were collected using a Likert scale (5, 4, 3, 2, 1) which were then converted into qualitative data. Data collection instruments include questionnaires, interviews, and observations, with respondents consisting of material experts, media experts, and students. This study follows the eight stages of development from Sugiyono: (1) analysis of potential and problems identifying the needs and obstacles faced by students; (2) data collection from Muhammadiyah books, online sources, and learning modules; (3) product design in the form of interactive quizzes based on Kahoot and Quizizz; (4) product validation by material experts and media experts, which gave an average score of 85.5% (good category) for material validation and 92.7% (very good category) for media validation; (5) product revision based on expert advice; (6) product trials on class X Accounting 1 students, with an average score of 91.2% indicating a very good response from students regarding the attractiveness and ease of learning media; (7) further product revision; and (8) mass production, which resulted in an average response of 90.6% from class X students, indicating that this media is effective and able to increase student participation and understanding of Muhammadiyah material. The results of the study indicate that the ICT-based gamification method is effective in increasing student involvement, attracting interest in learning, and deepening student understanding of Muhammadiyah learning. This media is suitable for widespread application in technology-based learning.

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Introduction

Information and Communication Technology (ICT)*or Information Communication Technology* (ICT) is now widely known by the public, from children to adults. The very rapid development of ICT includes the process of using tools, manipulating, and managing information. Its scope includes everything related to processing and transferring data between devices through various technological tools. In everyday life, ICT is very helpful in lightening work, meeting needs, and supporting the learning and teaching process (Pratama dkk., 2022). Science is developing rapidly, especially in the current era of digital education, where mastery of ICT is very important. The use of computers to access, process, and present information, both individually and in groups, has become a primary need. Along with the development of ICT, almost everyone now uses technology such as the internet and smartphones in various daily activities (Sulaeman dkk., 2020).

The development of Information and Communication Technology (ICT) has had a major impact on the need for educators to increase creativity in designing learning methods. Currently, many game designers are studying psychology and other disciplines related to human motivation and behavior. Heni Jusuf's (2016) research in the field of learning multimedia tends to evaluate the level of learning outcomes and the importance of careful planning. However, the study concluded that multimedia technology does not always automatically create significant learning motivation. This shows that introducing multimedia resources alone is not enough to increase student learning motivation excessively. A more holistic and integrated approach is needed that considers the characteristics and needs of individual students, as well as optimal strategies for integrating the technology into the learning process effectively. Interestingly, students tend not to complete daily tasks on time, but are willing to spend a lot of time playing. From this phenomenon, the idea emerged to combine learning and games to encourage students to complete their studies in a more fun and interesting way (Jusuf, 2016).

As the primary foundation of character education for children, family

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education plays a crucial role in shaping children's behavior and religious values, as taught in the Islamic perspective, which emphasizes the importance of character education from an early age (Julaiha & Yusuf, 2024).

The use of gamification methods is increasingly popular in various educational environments due to the appeal of games that are effective in motivating and influencing individual behavior. This method is applied as a game-based learning model that includes several important factors, such as clear learning objectives, responses given by participants, awards achieved, problem-solving strategies, chronological recording of activities, participant attendance, environmental context, challenges presented, and aspects of curiosity. With this approach, gamification is able to create a more interactive, interesting, and relevant learning experience for students (Rahmania dkk., 2023).

The use of applications such as Quizizz, Kahoot, and Mentimeter are examples of the application of technology in interactive learning. Quizizz is an online platform designed to create engaging interactive quizzes, support classroom learning, and formative assessments. This application is easy to use, so teachers and students can quickly access and utilize it. Quizzes can be arranged with 4-5 answer choices, including the correct answer, and are equipped with features to add images as question backgrounds and flexible settings. After the quiz is completed, students can join using a unique 6-digit code (Kusuma & Muslim, 2023). Kahoot, on the other hand, is an educational game that aims to increase students' interest in learning. This application allows students to understand topics while playing, creating a fun, joyful, and non-boring learning atmosphere. This approach has been proven to increase student motivation while making the learning process more interesting and enjoyable. In today's digital era, learning that does not involve technology is often considered monotonous and one-way, making students feel bored and less interested (Plump & LaRosa, 2017). Thus, applications like Quizizz and Kahoot provide innovative solutions to increase student engagement in the learning process.

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Muhammadiyah education can be defined as a learning activity about the nature of the Muhammadiyah movement, the pattern of preaching of the Prophet Muhammad SAW, and aspects of renewal in Islam. The main objective of this education is to instill Islamic values and attitudes based on the Qur'an and the Sunnah of the Prophet SAW. These values are expected to be reflected in a person's views, attitudes, and actions, as well as in efforts to defend and fight for Islam (Mu'ti, 2021).

In Muhammadiyah learning, there are four main approaches used. The historical approach aims to understand Muhammadiyah from a historical perspective by examining the background of its establishment, the strategy of the struggle for da'wah, social, political, and religious dynamics, the development of the Muhammadiyah struggle line (khittah), and Muhammadiyah's contribution to the nation and state. The ideological approach emphasizes understanding the beliefs, ideals of life, and guidelines for life that are the basis for Muhammadiyah members (Romelah dkk., 2024). This approach aims to strengthen the spirit of cadre formation for the next generation by instilling the basic values of Muhammadiyah. In addition, this approach also functions to understand the views, beliefs, and ideals that underlie Muhammadiyah's struggle as a progressive Islamic movement. The socialist approach emphasizes understanding the characteristics of Muhammadiyah, the Preamble to the Muhammadiyah Statutes, and its beliefs and ideals in understanding the principles and vision of the organization. Finally, the structural approach focuses on analyzing the organizational structure of Muhammadiyah, including how this organization carries out its mission of da'wah through a good system and governance. In this approach, the aspects of coordination, task management, and organization are the main focus to ensure the success of the implementation of Muhammadiyah's mission.

The purpose of this study was to evaluate the effectiveness of game-based learning methods (gamification) that integrate ICT in Muhammadiyah learning at SMK Muhammadiyah 1 Purbalingga, in order to instill Islamic values such as cooperation, empathy, and creativity, and to determine the

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learning response to the use of Gamification that is more interactive, interesting, and relevant to students' daily lives. It is hoped that through this approach, students will be more impressed to understand Islamic teachings and gain learning experience of these values in everyday life.

Method

This study uses the Research and Development (R&D) method. The research that applies 10 steps of its use includes: 1) Potential and Problems; 2) Data collection; 3) Product Design; 4) Design Validation; 5) Design Revision; 6) Product Trial; 7) Product Revision; 8) Usage Trial; 9) Product Revision; 10) Mass Production.

Development of products produced through learning media with gamification methods based on Information Communication and Technology (ICT) teaching of Muhammadiyah. Subjects of research with Muhammadiyah Teachers and Students of SMK Muhammadiyah 1 Purbalingga.The data collection process was carried out by two validators, namely a resource person who is an expert in Muhammadiyah material and a practitioner who is an expert in learning media.

Researchers also use observation and documentation as tools to collect data. Observation is the process of observing and recording relevant facts needed by researchers. Documentation is a method of collecting data by searching for information stored and published in various documents. These documents can be in the form of books, meeting minutes, diaries, and so on, which contain relevant information needed by researchers to support the research being conducted (Abubakar, 2021).

The data analysis technique in this study uses descriptive analysis based on established development procedures. Qualitative data is converted into quantitative data with a five-level scale: Very Good (5), Good (4), Sufficient (3), Less (2), and Very Less (1). The average score is calculated using the formula $\bar{x} = \frac{\Sigma x}{N}$, where Σx is the number of scores and N is the number of assessors. Furthermore, the average score is converted back to a qualitative value based

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on predetermined criteria in accordance with the assessment guidelines from (Darodjat & Wahyudhiana, 2015). This technique allows for objective and structured analysis in assessing the quality of the developed product.

Result

The development that has been carried out is (1) analysis of potential and problems, (2) data collection, (3) product design, (4) product validation, (5) product revision, and (6) product testing. The following is an explanation of the six stages of development.

1. Analysis potential and problems

Potential and problems faced in learning Muhammadiyah in class X Accounting 1 students have android devices, but limited internet access is the main obstacle in implementing technology-based learning. Learning facilities are generally adequate, but obstacles to internet access affect the effectiveness of implementing innovative methods.

Muhammadiyah teachers have used the gamification method with the Wordwall application. This method integrates game elements into learning to increase student motivation, activeness, and understanding of the material. Wordwall is applied in the form of learning evaluation through the stages of creating questions to ranking students based on the results.

Resultsobservations show that the gamification method is able to increase students' learning motivation, active participation, and religious awareness. However, optimizing the implementation of gamification requires better technological facilities and internet access. This approach provides an active, creative, and enjoyable learning experience, thus contributing to improving the quality of Muhammadiyah learning.

2. Data collection

The development of Muhammadiyah teaching materials for class X at SMK Muhammadiyah 1 Purbalingga is based on the analysis of teaching modules, Muhammadiyah books, the internet, and other sources. The main material identified is the Characteristics of Muhammadiyah Institutions, with

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learning objectives including the ability to explain, be grateful, and show a sense of belonging to Muhammadiyah Institutions.

The core competencies developed include four main aspects: appreciation of Islamic religious values (KI.1), formation of positive character such as honesty, discipline, and responsibility (KI.2), understanding and application of knowledge in various fields (KI.3), and the ability to create creative and effective solutions (KI.4). Basic competencies are in line with efforts to encourage students to understand, practice, and show love for Muhammadiyah Institutions in everyday life.

The teaching materials have been designed to build students' insight into Muhammadiyah values in an integrative manner, both in terms of factual knowledge and character building. The teaching modules serve as strategic guides to solve learning problems and improve students' competence in internalizing the values of Muhammadiyah Institutions. This competency-based approach is expected to create effective, relevant, and meaningful learning for students.

3. Product Design

Based on the Muhammadiyah book, there are several materials where these materials are one of the bases for implementing gamification.

Table 1. Product Design

No.	Material	Product Design
1.	Chapter 1 (Characteristics of Muhammadiyah Institutions)	
2.	Chapter 2 (Muhammadiyah Students' Promise)	
3.	Chapter 3(History of the Development of Muhammadiyah)	
4.	Chapter 4(Characteristics of the Muhammadiyah Movement)	
5.	Chapter 5 (Organizing Muhammadiyah)	

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6.	Chapter 6(Muhammadiyah Council, Institutions, and Autonomous Organizations)	

At the activity design stage, the step taken is to create a product design. This design was then realized in the form of a quiz using the Kahoot and Quizizz applications.

4. Product validation

Based on the product validation that has been carried out, the research results show that the learning method developed has good quality in terms of material and media:

a. Material Expert Validation Results

The assessment by Nanang Suratrianto, S.Pd.I., produced an average score of "Good" with several indicators rated "Very Good." This shows that the learning materials developed are in accordance with basic competencies, are clear in conveying learning objectives, and provide meaningful learning experiences for students. Therefore, the learning materials are declared worthy of being tested in the field with 25 grade X students.

b. Media Expert Validation Results

The assessment by Arif Sahidin, S.Ag., showed an average score of "Very Good," especially in the aspects of visual design, message clarity, and technical functions of game-based learning media. This media is considered interesting, easy to understand, and supports students in understanding learning materials. Therefore, the learning media is declared ready to be tested in the field without revision.

5. Design Revision

Based on the validation assessment carried out by material experts and media experts, it can be seen that this product was declared to have no revisions and was immediately tested in the field.

6. Product Trial

The field trial activity was carried out on March 14, 2024, involving 25 students. This activity was carried out during Muhammadiyah class hours in

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class X Accounting 1 of SMK Muhammadiyah 1 Purbalingga. The quiz was carried out in the classroom using each student's smartphone. During the quiz process, students participated enthusiastically until the end of the quiz. Although conditioning and direction were needed by teachers and researchers so that students understood what they would do later.

7. Product Revision

Based on the validation assessment carried out by material experts and media experts, it can be seen that this product was declared to have no revisions and was immediately tested in the field on a mass scale.

8. Mass Production

After the data was collected, the survey showed that there were 25 students who answered the research questionnaire. The following percentage of those who responded to the research questionnaire can be seen in the following figure.

Figure 1. Student Response Pie Chart

Based on the responses of 75 students to the gamification product, 54 students or 72% rated the product as “Very Good,” 14 students or 18% rated it as “Excellent,” and 7 students or 10% rated it as “Good.” None of the students rated the product as “Fair” or “Poor.” The data indicates that students of SMK Muhammadiyah 1 Purbalingga overwhelmingly gave a positive response to the

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gamification product based on Information Communication and Technology (ICT), with the majority rating it as "Very Good" and a significant portion rating it as "Excellent."

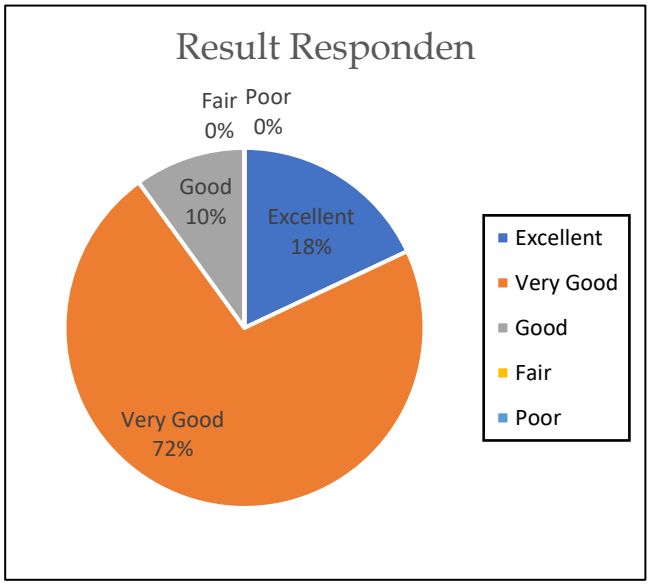

Figure 2. Student response to the use of Information Communication and Technology (ICT) based gamification in Muhammadiyah learning.

This data aligns with the study conducted by (Hamari dkk., 2014), which highlights that the implementation of gamification in learning can enhance student motivation, engagement, and overall learning experience. The study also found that gamification elements such as rewards, challenges, and interactivity effectively capture students' attention and facilitate a more effective learning process. Thus, the responses from the students of SMK Muhammadiyah 1 Purbalingga support these findings, with the majority providing positive feedback on the gamification product based on Information Communication and Technology (ICT).

Discussion

Based on the description of the research results above, an important point can be taken that the gamification method is used as an effective Muhammadiyah learning media and makes students more active in learning. This is also based on the results of research conducted by (Fitria, 2022), The results of the study showed that the use of gamification in learning resulted in a positive response to students where they participated more actively and were enthusiastic about participating in learning. The results of the study are also in

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line with (Wood & Reiners, 2015), This shows that the use of gamification in learning is an alternative learning method that can increase student learning motivation, therefore it is hoped that with changes in learning can be fun and interesting. (Lee & Hammer, 2011) also stated that the Application of the Gamification-Based Cooperative Learning Model is also more effective when compared to lecture and practice methods.

Current learning approaches emphasize interactive, collaborative, and technology-based methods to enhance student engagement and support optimal learning outcomes. The OLSI (Own it, Learn it, Share it) learning method, which focuses on active learning, deep understanding, and knowledge sharing, aligns well with these demands (Nisa & Pratama, 2024). Its implementation can be optimized by utilizing technology-based applications such as Kahoot. As a flexible and engaging evaluation tool, Kahoot helps students recall the competencies they have learned, increases their interest in learning, and strengthens the evaluation process. The flexibility of Kahoot, which can be used anywhere, supports the OLSI approach in creating meaningful and collaborative learning experiences, making it highly relevant to modern educational needs.

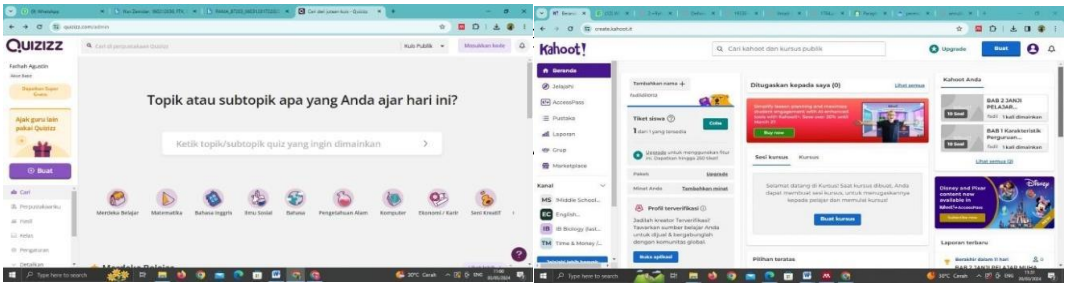

Figure 3. Home page of gamification methods on Quizizz and Kahoot

As a teacher, the Kahoot application can be used with the following steps: First, type in the website address.https://create.Kahoot.it on the search page. Then, register by following the available procedures, either through a Gmail account, Microsoft, Clever, iCloud, and other options. After successfully entering the sign in page, select the appropriate account type, in this case, as a teacher, click the red option that says "teacher". Next, follow the instructions in the "Describe your workplace" menu to determine the institution where you

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work, by selecting the "school" option for the school. You will then be taken to the initial display of the Kahoot application after that.

The advantages obtained from the perspective of users or students towards Kahoot are the interest and fun presented by Kahoot, which makes students involved in learning activities so that they achieve the targeted competencies. This activity encourages students to participate more actively in the learning process and helps them understand the material taught by educators. By using the Kahoot learning tool, the learning environment becomes comfortable, interesting, and enjoyable for students. After students master the game, students' self-confidence and self-esteem increase. However, there are also some disadvantages in using Kahoot learning media. One of them is related to inadequate infrastructure and frequent disruptions to unstable internet network connections. When there is a disruption to the internet network, the Kahoot game will stop suddenly and it will take a while to reconnect (Plump & LaRosa, 2017).

Quizizz is a fun and engaging learning assessment tool because it is flexible and narrative. This application can help students improve their abilities, which in turn can improve students' interest and their learning assessment results.The main advantage of this application is its flexibility, because it can be used anywhere and anytime.

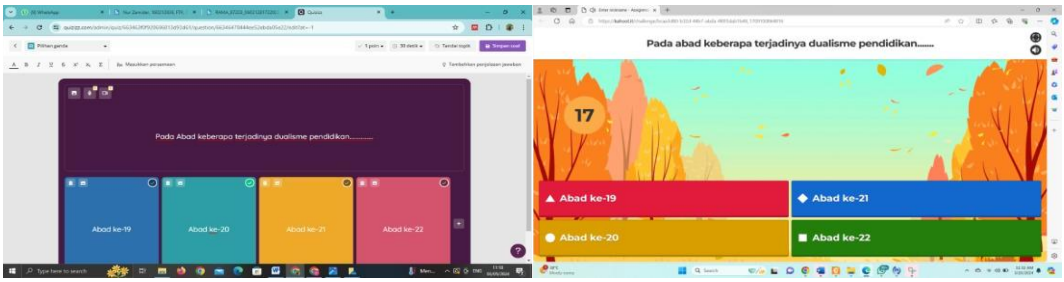

Figure 4. Question creation page on Quizizz and Kahoot

The following is a Quizizz image of the implementation of the Muhammadiyah learning method based on Information Communication and Technology (ICT):

1) Open a browser or download the application on your smartphone via the

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Play Store or App Store, then type quizizz.com. After that, click the "Register" button.

2) In the "Register using email" section, enter your email address, then press "Next"
3) Select at a school
4) Select "teacher"
5) In the first section, fill in the title according to your gender. Also enter your first name, last name, and in the password column, use a combination of 8 characters consisting of letters and numbers. After that, click "Continue"
6) You will be taken to the main page
7) After clicking create quiz, the next step is to start creating questions. Here are the steps to create questions on the Quizizz media:
   a) Enter your question in the "Write your question here" column. Next, in the answer choices, select one of the answers as the correct answer or answer key. After that, click the "Save" button. On the right, you will see a display of the quiz page that you have created.
   b) Once you click the "Save" button, it will look like below. To add new questions as many as you want to test, simply click the "New Question" option. Once you have created all the questions, click the "Exit" or "Back" button to return to the previous page.
   c) There are two options here. If you want to play it right away, select "Play Now". However, if you are going to assign it as homework, select "Make Homework".
   d) If you choose to play live, the next step is to select classic mode.
   e) Before continuing, there are some advanced settings related to the Quizizz media, namely:
      (1) Show students questions. Provide students with the correct answer for each question. Here, there are three action options: "Validation Only", "On", and "Off". If you select "On", the system will show the answer key to students if their answer is wrong. If only "Validation", the system

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will evaluate students' answers, but will not show the answer key. Correct answers will be marked with a green check mark, while incorrect answers will be marked with a red check mark. If "Off" is selected, students will not be able to see the answer key or any evaluation.

(2) Show answers after the round is over. Let students see the questions and answers at the end. This setting is disabled to keep students curious and motivated to ask questions if there are any wrong answers from students.

(3) Enable time features, leaderboards, random questions, random answers, and display memes.

f) Share the code with the students. They will start the Quizizz game by opening the site and entering the code given by the teacher. After the teacher starts the game, all students who have joined can start playing after the countdown is over. After all students have finished answering, the teacher can download the learning results in Excel file format.

g) The teacher monitors the process via the laptop screen.

h) Downloading learning outcomes

i) Download file in excel format

Conclusion

Research and development of gamification methods based on Information Communication and Technology (ICT) in Muhammadiyah learning through the Kahoot and Quizizz applications include the stages of potential and problem analysis, data collection, product design, validation, revision, testing, to mass production. At the analysis stage, it was found that limited internet access was the main obstacle even though technological devices were available. The teaching materials focused on Muhammadiyah values to build students' religious competence, character, knowledge, and creativity. Product validation showed "Good" results in the material aspect and "Very Good" in the media aspect, so the product was declared worthy of being tested without revision. The trial was

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conducted involving 25 students of class X Accounting 1 at SMK Muhammadiyah 1 Purbalingga, who took the gamification-based quiz enthusiastically. The survey results showed that 72% of students rated the product as "Very Good" and 28% rated it as "Good," indicating that this method was received positively and was effective in increasing student motivation and participation in learning.

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