Use of Gamification in Indonesian for Non-Native Speakers (BIPA)

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Abstract. The purpose of this study was to discuss the use of gamification to students of the BIPA program at State University of Malang. The platform used a mobile application that contains elements of gamification which includes challenges, missions, badges, leaderboard and multiplayer. The results showed that the learning motivation and interest of BIPA program students were very high when they were using gamification in the classroom. This study uses a quantitative approach because information will be presented in numerical form and analyzed using statistics. To find a mobile platform that is suitable for use in gamification, a literature study is conducted to choose a mobile platform that has gamification mechanics including challenges, missions, badges, leaderboard and multiplayer. The population in the study were all BIPA program students at State University of Malang. The sampling technique used purposive sampling method with a sample of 18 people. The gamification in the BIPA program uses BIPAJAR application that has adopted gamification mechanics namely challenges, missions, badges, leaderboard and multiplier. BIPA students were given 3 days to try BIPAJAR application. The Minimum Standards for Completion Criteria (KKM) is 70. The results of the questionnaires distributed to the students concluded that students' interest and motivation in using gamification were quite high with a score of 78.67% and student learning progress grew by 82.35%.

Keyword: mobile application, gamification, bipa

1. Introduction

The BIPA training program aims to master 4 aspects of language skills. Those 4 aspects include the following skills: (1) listening, (2) reading, (3) speaking, and (4) writing. Those skills must be mastered during the process of learning Indonesian language, so that the material can be delivered and run smoothly.

Mauludiyah (2015) and Azizah (2017) developed some teaching materials and language learning methods. They showed that foreign students are very enthusiastic and eager to learn Indonesian language and need learning media to understand the BIPA program materials. McQuiggan (2015) and Murphy (2017) stated that the learning trend in Southeast Asia showed an increase in the use of smartphones to access mobile learning using gamification. In addition, students also have their own smartphones to access content and search for materials on the internet.

The concept of gamification according to Kapp (2013), Setiana & Hansun (2017), Sandy & Hidayat (2019) is a process that aims to change the non-game context (e.g. marketing) to be appealing, attractive and innovative by combining game elements (game thinking, game design, and game exploration).
mechanic). The use of gamification is very effective in turning activities that are generally less pleasant, make them quickly bored, and less challenging into more appealing ones if gamification is applied.

Figure 1. The concept of gamification according to Setiana & Hansun

Sakai & Shiota (2016), Gressick & Langston (2017) and Selirowangi (2018) made a statement related to the use of gamification in class to increase learning motivation to achieve good, positive and significant results. Another study conducted by Mananzo & Baeza (2018) related to gamification utilization for the careers of university students showed positive results and those students were very interested in using gamification. The use of gamification in the BIPA program is very appropriate because BIPA program students can be more active and motivated to learn.

2. Method
This study uses a quantitative approach because information will be presented in numerical form and analyzed using statistics (Arikunto: 2010). To find a mobile platform that is suitable for use in gamification, a literature study is conducted to choose a mobile platform that has gamification mechanics including challenges, missions, badges, leaderboard and multiplayer. The population in the study were all BIPA program students at State University of Malang. The sampling technique used purposive sampling method with a sample of 18 people. The research instrument used a closed questionnaire containing 10 questions with 5 alternative answers with gradations of values presented in the following table.

| Statement          | Score |
|--------------------|-------|
| Strongly agree     | 5     |
| Agree              | 4     |
| Neutral            | 3     |
| A Little Bit Disagree | 2   |
| Disagree           | 1     |

3. Results
3.1 Gamification Platform
Gamification used in the learning implements Android mobile platform since by using an application-based platform, classroom activities will be easier to monitor and the data resulted from the gamification activities will be easier to analyze. From the literature study, it was decided to use the BIPAJAR application in which gamification mechanics included challenges, missions, badges, leaderboard and multiplayer.
Figure 2. BIPAJAR Application

The gamification mechanics framework that was installed in BIPAJAR application includes:

a. In the practice menu section, namely reading, listening, grammar and word order, 4 levels are available. If the player successfully completes each level then the player gets a diamond that can be used to open the next level.

b. When succeeded in completing a level, the player will get a badge that can be seen in the achievement menu. There are 24 badges that must be collected by the player.

c. In the mission menu, the player will carry out the task and if he/she is successful, he/she will get a diamond.

d. On the scoreboard menu, the player can view other player rankings online.

e. In the multiplayer menu, the player can duel with other players online to get the highest score and get more diamonds.

While BIPAJAR the framework of BIPAJAR gamification platform in terms of back-end is as follows:

Figure 3. BIPAJAR Back-end Platform

The definitions of the picture above are as follows:

a. STTApplication, which is the Speech to Text plugin whose function is to convert sound into writing or vice versa.

b. ASRApplcation, the Automatic Speech Recognition plugin whose function is to retrieve GET data from the Google VoiceSearch API.

c. Multiplayer, namely the Multiplayer plugin used to create a GET / POST multiplayer system by using a server from Photon Engine.
d. SaveDatabase, which is a plugin for storing user data, scores, and other gamification components using GET / POST from the GoogleFirebase server.

e. BIPAJAR uses the GooglePlayGame component to log in players.

f. GoogleVoiceSearch is an API component that has Google which functions like speech recognition.

g. GooglePlayGame is a Google component used to log players into BIPAJAR application.

h. GoogleFirebase is a Google component whose function is to store user data.

i. PhotonRealTime is a plugin from Photon Engine that is used to develop multiplayer systems.

3.2 Implementation of Gamification in the Classroom

In its implementation in the classroom, gamification is done in 5 steps. These steps need to be done so that the implementation of gamification can be effective. The steps include:

a. Identify and understand the need for targeted students

In the learning process, it is very important because it determines the success of the program because identifying and understanding the need of targeted learners will help teachers in designing classroom activities, managing and empowering students to achieve the goals of gamification activities. The analysis that can be done includes the age group, learning ability, innate skills, facilities and infrastructure and etc.

b. Determine learning objectives

Every learning must have a purpose, including gamification. In gamification, the goals to be achieved at the end of learning must be clear. These objectives can include: (1) General objectives, for example students are able to complete assignments, tests, examinations, or projects provided, (2) Specific objectives, for example, students are able to understand concepts, perform tasks after training, or complete a given task, etc., and (3) Behavioral purposes, for example students are able to use tools, obtain new skills, etc.

The success of the program depends on the ability of the teacher to define the objectives of gamification activities.

c. Arrangement of experience

This stage is the stage to measure students' knowledge, what kind of competences need to be learned and what objectives need to be achieved at the end of the activity. This stage must be easily measured and the teacher must be able to ensure that existing obstacles can be identified. Motivated students will be encouraged to go to the next level, while those who experience boredom will be involved and those who experience difficulties will be guided and directed. This will provide more time for teachers to assess the objectives, material context, and gamification activities to be more effective in overall learning.

d. Identify resources

At this stage, teachers must know the resources that are available and needed to perform gamification. In this stage an activity program will be designed, sorting out and selecting the gamification elements that will be included in the activity program such as the use of leaderboards, prizes and the tracking system that will be used. This needs to be done so that the gamification becomes attractive, students are motivated and provide quick feedback.

e. Apply the element of gamification

The last step is applying gamification. At this stage, teachers need to ensure that the gamification process runs according to the program that has been designed. Identify what becomes the obstacle when the process is running, perform feedback and evaluate activities.

3.3 Activity Results

The results of the questionnaires distributed to 18 students of the BIPA program included the aspects of interest in learning using gamification the aspects of studying. Thus, the following data was obtained:
The aspects of learning interest assessed include (1) feelings of pleasure in using the application, (2) exploration of application features, (3) interest and curiosity, (4) student involvement, and (5) ease of use of the application.

The aspects of studying that are assessed include: (1) the application in accordance with the learning objectives, (2) the application helps student learning, (3) the depth of the material that is easy to understand, (4) the application is not boring, and (5) the application can support student learning independence.

In the trial related to the success of BIPAJAR application, BIPA students were given 3 days to try BIPAJAR application. The Minimum Standards for Completion Criteria (KKM) is 70. From the results of monitoring the progress of learning of 18 students of the BIPA program who are using gamification platform, the following data is obtained.
The results of student learning progress for 3 days show the following table:

| Student   | Percentage | Status |
|-----------|------------|--------|
| Sample 1  | 88.89      | Pass   |
| Sample 2  | 100.00     | Pass   |
| Sample 3  | 80.00      | Pass   |
| Sample 4  | 88.89      | Pass   |
| Sample 5  | 95.56      | Pass   |
| Sample 6  | 73.33      | Pass   |
| Sample 7  | 91.11      | Pass   |
| Sample 8  | 80.00      | Pass   |
| Sample 9  | 82.22      | Pass   |
| Sample 10 | 68.89      | Not Pass |
| Sample 11 | 73.33      | Pass   |
| Sample 12 | 75.56      | Pass   |
| Sample 13 | 66.67      | Not Pass |
| Sample 14 | 91.11      | Pass   |
| Sample 15 | 88.89      | Pass   |
| Sample 16 | 57.78      | Not Pass |
| Sample 17 | 80.00      | Pass   |
| Sample 18 | 100.00     | Pass   |

From the results of the learning progress for 3 days the following conclusions are obtained:

- Day 1, average student progress is 21.68% and no student has passed KKM.
- Day 2, average student progress is 56.79% and 2 students pass KKM.
- Day 3, average student progress is 82.35% and 15 students pass the KKM.

4. Conclusion

The gamification in the BIPA program uses BIPAJAR application that has adopted gamification mechanics namely challenges, missions, badges, leaderboard and multiplayer. The results of the questionnaires distributed to the students concluded that students’ interest and motivation in using gamification were quite high with a score of 78.67% and student learning progress grew by 82.35%.

From the results of direct implementation in the classroom, there are several parts that need to be suggested and future works, among others: (1) Some materials are too difficult to be spoken by BIPA students so it is better to make those materials easier, (2) Develop a version for iOS, (3) Add images and animations so that the application does not have a monotonous display, and (4) Instructions for use should be added in English, (5) Add more language options, for example to English, Chinese, etc. and (6) add more functions like sharing the results of learning progress, badges and leaderboards to social media.
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