

# Development of Gamification-Based Online Learning Using Moodle

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## Development of Gamification-Based Online Learning Using Moodle

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### <sup>17</sup> ABSTRACT

<sup>15</sup>  
The Covid-19 pandemic has resulted in a change in the face-to-face learning process to online learning. But in the process, online learning is not always easy to do. Some of the problems in the implementation of learning from the internet network are not evenly distributed, the decrease in understanding ability and student learning outcomes, and also student saturation during the learning process. To overcome this, we need an online learning media based on gamification. Gamification is a learning process that is integrated with game design. <sup>16</sup> This study aims to develop gamification-based online learning using Moodle media. The method used in this research is the research and development method. This research and development use the ADDIE model. The results of the validation test carried out by the validator developed were declared very valid, with a percentage of 87.5% by material validators and 93.75% by media validators. Based on the feasibility test that has been carried out, it is obtained a percentage of 90.5% with a feasible category. From the series of validation tests and trials, it can be stated that overall, the learning media developed are very valid and very suitable for use in online learning.

**Keywords:** Online Learning, Gamification, Moodle

### INTRODUCTION

Learning is an active human process to gain knowledge, experience, and changes in individual behavior caused by experience. Learning can run well if there is active communication between students and their peers, facilitators, or other learning resources (Wangi, 2019). When active communication occurs, the learning objectives are achieved. In addition, active communication is an important factor required by the learning approach to achieving learning objectives (Rollings and Adams, 2003).

Learning activities aim to increase student activity in teaching and learning activities so that students can think according to their abilities to acquire knowledge. From a long learning process, students will get learning outcomes. This learning outcome is used as a measure of the success of the learning process. Low student learning outcomes are influenced by weak abilities in thinking and understanding concepts. This results in student skills in solving problems in the future. If students can solve problems, they can also solve different problems in everyday life.

At the beginning of 2020, there were cases of the Covid-19 pandemic around the world, including in Indonesia. This pandemic has an impact on all aspects of life, especially in the field of education. Therefore, the government provides a solution by changing the face-to-face learning process into online learning. Online learning is learning that is done online. This learning requires internet networks and digital technology. Online learning has its opportunities and challenges. Online learning makes lectures and assignments easier for students without having to meet face-to-face, however, the implementation of online learning experiences network barriers because not all regions have a good internet network. Online learning indirectly has an impact on student learning outcomes. According to Sutrisno (2021), student learning outcomes are low because of the limitations of the presenters and the understanding of students who are not well known for networking. The longer online learning is carried out during the pandemic, the fewer students are interested in taking part in learning. As a result, student learning outcomes are less than optimal and seem to only fulfill their obligations. To overcome this, innovation in online learning is needed, namely gamification. Gamification is a process that aims to make learning more interesting by integrating thinking games, game design, and game mechanics (Wangi et al., 2018) (Seaborn and Fels, 2015).

In this study, researchers will develop gamification-based online learning and student learning outcomes during the Covid-19 pandemic. The concept of gamification in this study is to include game elements in online learning media, in this case, e-learning using Moodle. In this game, students participate in course activities on 6 different levels. Students will collect points at each level. If each student can complete the activity at each level, then the student will be able to advance to the next level.

The gamification that will be developed has four basic game components: gamification rules, feedback (leaderboards), prizes, medals, goals, and challenges. Through this gamification strategy, it is expected to (1) provide choice and control to students, (2) foster self-confidence in their ability to face and solve challenges, (3) provide materials and answer keys, and (4) reward additional learning taken, and (5) helping students establish social interactions through leadership activities or other social interactions.

## METHOD

This research is a research and development research. According to Sugiyono (2016), research and development is a research method used to produce certain products and test their effectiveness of these products. The development model in this study is the ADDIE development model according to Lee and Owens (2004), namely analysis, design, development, implementation, and evaluations. This research was conducted at Darul 'Ulum Islamic University. Data collection techniques in this study are observation, documentation, and interviews. The data collection instruments are observation sheets, interview sheets, media validation sheets, material validation sheets, and student response questionnaires. The data analysis technique in this development research is the analysis of the validity of the gamification media from the media validator and material validator. After that, the product was tested on the test subjects. The test subjects in this study were 8th semester Indonesian Language and Literature Education students, 10 students in class A and 10 students in class B. However, before testing the product, the validity and reliability tests were carried out for student response questionnaires. The validity test was used to measure the validity of the questionnaire, while the reliability test was used to measure the reliability of the questionnaire. The following are the results of the validity and reliability tests.

Table 1. Test the Validity of Student Response Questionnaires

| Question | Correlation | P-value | Criteria |
|----------|-------------|---------|----------|
| 1        | 0,565       | 0,009   | valid    |
| 2        | 0,463       | 0,040   | valid    |
| 3        | 0,487       | 0,029   | valid    |
| 4        | 0,796       | 0,000   | valid    |
| 5        | 0,45        | 0,029   | valid    |
| 6        | 0,652       | 0,000   | valid    |
| 7        | 0,525       | 0,002   | valid    |
| 8        | 0,532       | 0,017   | valid    |
| 9        | 0,532       | 0,016   | valid    |
| 10       | 0,488       | 0,029   | valid    |

As seen in Table 1, each question has a p-value of less than 0.05 (Sugiyono, 2016), then each question in the student response questionnaire is said to be valid.

Table 2. Reliability Test of Student Response Questionnaires

| Cronbach's Alpha | N of Items |
|------------------|------------|
| 0,743            | 10         |

As seen in Table 2, the Cronbach alpha value obtained is 0.743, and the value is greater than 0.6 (Sunyoto, 2009), so it can be said that the student response questionnaire is reliable.

## RESULTS AND DISCUSSION

The result of this research is the development of online learning on Moodle using gamification. Gamification applied to Moodle is in the form of levels and rewards. The level referred to in this study is the level contained in the game on Moodle. If the level passed is higher, then the learning outcomes obtained by students are getting better. Each level has its value points. If a student has passed each level, the student's points will increase. In addition to levels, there are also rewards. The reward is used to determine the position of the student at what level and the number of points earned. With gamification in e-learning, it is hoped that it can improve student learning outcomes, especially in the PBSI learning media preparation course.

To test whether the media used is feasible or not, a media validation test is used. Media validation tests are carried out by media validators and material validators. The media validator performs a validation assessment using a questionnaire with 10 total questions with a value following a Likert scale from a score of 1 to 4. The following are the results of the media validator validation test.

Table 3. Media Validator Validation Test

| <b>Validation</b>  | <b>Media Validator 1</b> | <b>Media Validator 2</b> | <b>Average</b> |
|--------------------|--------------------------|--------------------------|----------------|
| <b>Total score</b> | 37                       | 38                       | 37,5           |
| <b>Percentage</b>  | 92,5%                    | 95%                      | 93,75%         |
| <b>Category</b>    | very valid               | very valid               | very valid     |

Based on the validation results of the media validators in Table 3, the average value of the media validators is 37.5 with a very valid category. In addition, it can be seen that the average validity percentage of the media validator is 93.75%. Next, a validation test was carried out by the material validator. The material validator conducts a validation assessment using a questionnaire consisting of 10 questions with a value following a Likert scale from a score of 1 to 4. The following are the results of the material validator validation test.

Table 4. Material Validator Validation Test

| Validation  | Material Validator 1 | Material Validator 2 | Average    |
|-------------|----------------------|----------------------|------------|
| Total score | 34                   | 36                   | 35         |
| Percentage  | 85%                  | 90%                  | 87,5%      |
| Category    | very valid           | very valid           | very valid |

Based on the validation results from the material validators in Table 4, the average value of the material validators is 35 with a very valid category and the average validity percentage of the media validators is 87.5%. Based on the results of the validation of the media validator and material validator, it was concluded that the gamification-based online learning media using Moodle developed by the researcher was declared very valid to be tested.

The final stage of this research is product testing. At this stage, the product or media was tested on 15 students. The product trial was carried out using a student response questionnaire consisting of 10 questions. The following are the results of product trials.

Table 5. Product Trial

| Respondent | Total Score | Percentage | Category      |
|------------|-------------|------------|---------------|
| 1          | 31          | 77,5%      | Very Eligible |
| 2          | 35          | 87,5%      | Very Eligible |
| 3          | 39          | 97,5%      | Very Eligible |
| 4          | 38          | 95%        | Very Eligible |
| 5          | 33          | 82,5%      | Very Eligible |
| 6          | 37          | 92,5%      | Very Eligible |
| 7          | 40          | 100%       | Very Eligible |
| 8          | 39          | 97,5%      | Very Eligible |
| 9          | 39          | 97,5%      | Very Eligible |
| 10         | 31          | 77,5%      | Very Eligible |

|                |             |              |                      |
|----------------|-------------|--------------|----------------------|
| 11             | 37          | 92,5%        | Very Eligible        |
| 12             | 38          | 95%          | Very Eligible        |
| 13             | 37          | 92,5%        | Very Eligible        |
| 14             | 35          | 87,5%        | Very Eligible        |
| 15             | 32          | 80%          | Very Eligible        |
| 16             | 38          | 95%          | Very Eligible        |
| 17             | 36          | 90%          | Very Eligible        |
| 18             | 35          | 87,5%        | Very Eligible        |
| 19             | 36          | 90%          | Very Eligible        |
| 20             | 38          | 95%          | Very Eligible        |
| <b>Average</b> | <b>36,2</b> | <b>90,5%</b> | <b>Very Eligible</b> |

In Table 5, the score obtained from each respondent is above 30 and the percentage is above 75%. The average score of the respondents is 36.2 and the average percentage is 90.5%. This shows that the media has met the very feasible category. From several series of validations from expert media, validation from material validators, and product trials that have been carried out, overall the learning media can be declared very valid and very feasible to be used as a support for student learning.

## CONCLUSION

The results of this study are gamification-based online learning media using Moodle for the PBSI learning media preparation course. Gamification is applied in the form of levels and rewards. This learning media has been valid and feasible to use based on the assessment of the validator and the experimental subject with a final result percentage of 90.5%. Details of the assessment from the validator and the experimental subject are as follows: (a) The validation results on the media validator obtained a percentage of 93.75% with a very valid category; (b) The results of the validation on the material validator obtained a percentage of 87.5% with a very valid category; (c) The results of the trial on the experimental subject, obtained a percentage of 90.5% with a very feasible category.

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