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Application of Gamification to Increase Student Learning Motivation in Learning IP Address Class X RPL at SMKN 1 Cimahi

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ABSTRACT

Education is an important part of increasing one's quality of life, and it can be improved through effective learning. One of the challenges in the learning process is low student motivation, which can affect learning outcomes. This study aims to improve students' motivation to learn by applying the gamification method in basic computer network learning. This research uses a classroom action research approach with four stages, namely planning, action, observation, and reflection. The research subjects were X RPL students from SMK Negeri 1 Cimahi. The data were gathered through observation, interviews, questionnaires, and documentation. The initial observation results showed low student motivation during basic computer network learning. After applying the gamification method, there was a significant increase in students' learning motivation. Data analysis showed a rise in average learning motivation from 72 to 77 after the implementation of gamification. Student learning outcomes also improved, reflecting the effectiveness of the gamification method. This study concludes that integrating gamification with the Wordwall application can boost the learning motivation of students in class X RPL SMK Negeri 1 Cimahi when learning Computer Network Basics. This method encourages students' active participation, enhances group interaction, and provides instant feedback, which contributes to the improvement of students' motivation and learning outcomes.

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1. INTRODUCTION

Education is one of the important steps for a person to improve their quality of life. In order to realize quality human beings, quality education is also needed. Quality education is obtained by a good learning process. The learning process can be supported by the presence of facilities, the environment, and a supportive learning model (Wardana & Sagoro, 2019). Learning models with one-way communication result in students not being actively involved in the learning process so that students are less dominantly involved in the learning process. Students who are not actively involved will easily feel bored and tend to be less motivated to learn. Lack of activity and lack of motivation in students will ultimately result in unsatisfactory learning outcomes.

Motivation can be defined as the power of a person that can raise the level of willingness to carry out an activity. Willingness can originate from within the individual itself (intrinsic motivation) and from outside the individual (extrinsic motivation). How strong the motivation an individual has will determine the quality of the behavior they displays, both in the context of learning and working and in other lives. Motivation is a positive energy that moves to influence a person in encouraging the realization of his goals or ideals. Learning motivation is a condition that exists in an individual where there is an urge to do something in order to achieve a goal (Rahman, 2021).

In recent years, gamification has attracted the attention of practitioners and researchers as a way to achieve a variety of emotional, cognitive, and social benefits and guide human behavior to drive innovation, productivity, or engagement. According to Nurmelati (2023), gamification is the use of game elements and game design techniques in a non-game context. Game elements are such as points, badges, levels, narratives, and so on, but as it develops, the core of gamification today is how to build motivation.

The current phenomenon requires educators to be more creative in teaching and learning so that students can collaborate, cooperate, be creative, and think critically. Using technology such as smartphone in the learning process will certainly attract students' interest so that the learning process and learning outcomes will be optimal. Educators can use various online applications that have been developed a lot to support the achievement of the learning process goals.

Based on the results of observations at three meetings in class X RPL SMKN 1 Cimahi during the learning process, student learning motivation was low. Some students were seen talking to their friends, playing on smartphones, and lacking enthusiasm and unenthusiasm when learning takes place. After knowing that some students are less focused on the learning process, especially when learning basic computer networks, the author tries to change this situation so that students are more focused on the learning process. By applying the gamification learning method, the author hopes that students' learning motivation will increase. The purpose of this research is to increase students' learning motivation with the gamification method.

2. METHODS

The type of research used in this study is CAR (Classroom Action Research), which is research conducted by a teacher or a certain person in the classroom with the aim of improving performance as a teacher so that student learning outcomes increase. The research stages consist of 1 cycle of four steps, namely: (1) Planning, (2) Action (3) Observation, and (4) Reflection (Prihantoro & Hidayat, 2019).

This research was conducted at SMK Negeri 1 Cimahi. The subjects of this study were 36 students of class X RPL. While the objects of this study were learning activities and learning

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motivation of students in class X RPL SMK Negeri 1 Cimahi. The factors studied in this study were (1) student factors consisting of learning activities and student learning motivation on basic computer network material through the gamification method and (2) teacher factors, namely teacher activities during learning through the application of the gamification method.

This research procedure uses the Kemmis and McTaggart model, consisting of planning, action, observation, and reflection.

2.1. Planning

Planning is a preparation carried out related to the CAR that is pioneered, such as implementing actions, implementing diagnostic tests to specify problems, creating learning scenarios, procuring tools to implement CAR, and others that are applied (Isnawati & Hadi, 2021). In this stage, several preparations are made, namely creating learning scenarios using the gamification method, creating pre-tests and post-tests, creating materials with Canva media, creating quizzes, preparing badges, and preparing prizes.

2.2. Action

At this stage the researcher takes action in accordance with the learning objectives that have been designed in the gamification method. The gamification method will use Wordwall.

2.3. Observation

This activity is carried out during the action process. Observations include observing students' learning motivation towards basic computer network material. The activities assessed during observation are attention aspects in the form of assessing student activities during the teaching and learning process, aspects of relevance in carrying out individual assignments, aspects of each individual's self-confidence, and aspects of student satisfaction during the learning process in basic computer network learning materials.

2.4. Reflection

Reflection is an activity to restate what has happened. At this reflection stage, all data and results obtained from various sources will be analyzed to determine students' interest in basic computer network material through the average and student learning outcomes.

This CAR focuses on students or researchers, highlighting the importance of engaging with the students from class X RPL at SMK Negeri 1 Cimahi, who are the recipients of the CAR. The reason the researcher chose class X was because it has been observed that some students were less focused on the learning process, especially when learning the basics of computer networks; therefore, the author tried to change this situation so that students were more focused on the learning process. Data collection was conducted through structured observations, interviews with students, distribution of questionnaires, and documentation. Data analysis was performed descriptively, describing data in sentences to obtain clear information. The sequence of research activities includes planning, implementation, observation, and reflection.

The success level indicator in this study is used as a guideline to assess the level of student achievement. The following is an interpretation of the success predicate based on the value range explain in **table 1**:

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Table 1. Interpretation of the success predicate based on the value range:

Success rate (In percentage)	Predicate
87 < x < 93	Very High
80 < x < 86	High
73 < x < 79	Average
66 < x < 72	Low
59 < x < 65	Very Low

In the context of this study, hese values are used to evaluate students' learning motivation. The results of the study showed an increase in students' learning motivation from before the implementation of the gamification method to after. Thus, the predicate of student success can be interpreted based on the predetermined range of values.

3. RESULTS AND DISCUSSION

This study begins with classroom observation and field orientation, with the goal of discovering and identifying difficulties with the basic programming learning process. After identifying the problem, develop a learning action plan to increase students' grasp of basic vocational learning.

The results of observations with the field orientation with the teachers show that learning is still done classically. During the learning process, only a few students were active in expressing their opinions; the others only received what was informed by the teacher without really understanding the concept being taught, so that when given assignments, there were still many students who did not understand the concept being taught.

This Classroom Action Research (CAR) focuses on increasing students' learning motivation. The implementation of learning is adjusted to the learning objectives. Learning activities on the basic of computer networks are understanding network topology and IP addresses. Learning is carried out in one meeting. Learning begins with reading a prayer, and then the teacher checks student attendance. The teacher informs that the material to be discussed is network topology and IP addresses. Because the learning model used is gamification, the teacher divides them into several groups. The groups formed are 5 groups consisting of 6 or 7 students. Before the learning activity begins, the teacher first provides information about the meaning of network topology and IP addresses. While teaching in class, the teacher used Wordwall as the media for gamification method.

Data collection was carried out by distributing questionnaires to students as research subjects. The questionnaire consists of 4 aspects, namely attention, relevance, self-confidence, and satisfaction. The distribution of the questionnaire was carried out in two stages, namely at the beginning and at the end of the study. The distribution of the questionnaire before the study was carried out to determine the initial condition of students' learning motivation before the gamification learning method was applied, while the distribution of the questionnaire at the end of the study was carried out to determine students' learning motivation after the gamification learning method was implemented on the IP Address material.

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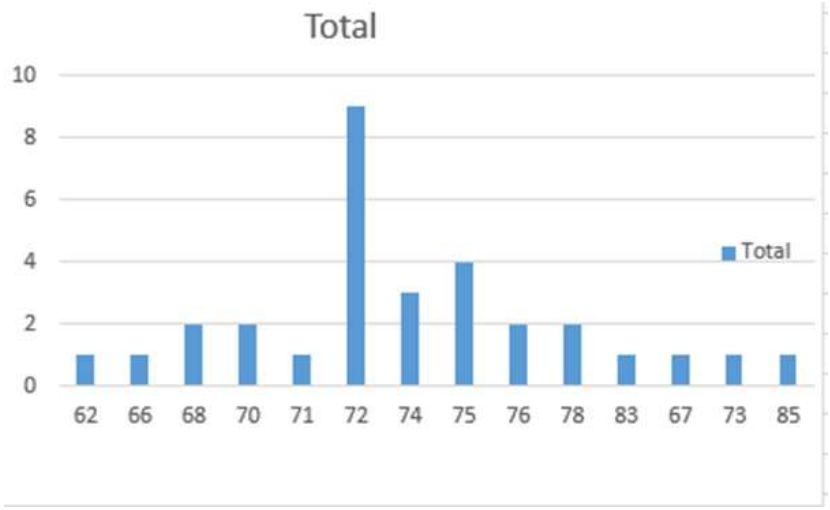
Based on the analysis of the data from the distribution of pre-research learning motivation questionnaires, the average result was 72. This shows that students' learning motivation is still low. In more detail, the results for each indicator can be described as in Figure 1 below.

Figure 1. Pre-research questionnaires result



In **figure 1**, it can be seen that students' learning motivation varies from 62 to 85. Furthermore, in the analysis of students' pretest learning outcome data, an average score of 72 was obtained. Of the 31 students, only 2 students received high category scores. Furthermore, 13 students were in the medium category, and 15 students were in the low category, and 1 student was in the very low category. This shows that most students' learning motivation is in “Average” criteria. Based on these results, the researcher applied a gamification learning model in basic vocational learning in the basic topic of computer networks. The material broadly discusses 1) network topology and 2) IP address.

Based on the analysis of the data from the distribution of the post-research learning motivation questionnaire, the average result was 77. This shows an increase in student learning motivation results after the implementation of the gamification learning model. In more detail, the results of each indicator can be explained as shown in the picture below.

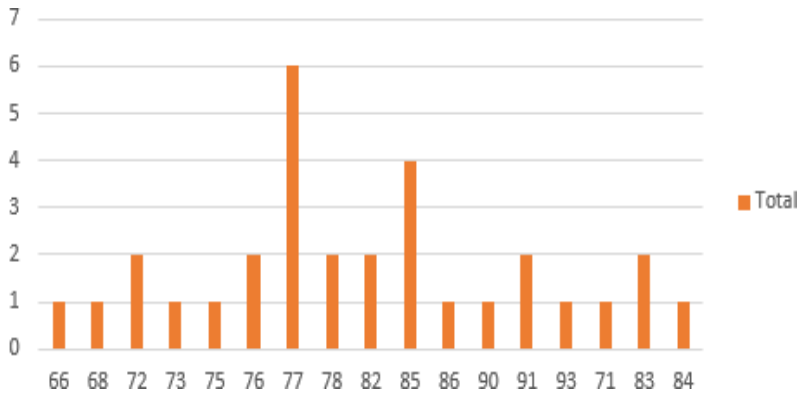


Figure 2. Post-research questionnaires result.

In **figure 2**, it can be seen that students' learning motivation varies from 66 to 93. Furthermore, in the analysis of students' post-test learning outcome data, an average score

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of 77 was obtained. Of the 31 students, only 4 students received very high category scores. Only 10 students received high category scores. Furthermore, 12 students were in the medium category, and 5 students were in the low category. After the gamification learning method was applied, the students were then given a post-test with the aim of measuring their learning outcomes. The post-test results showed that out of 31 subjects, there was an increase in learning motivation above the average.

In addition to the cognitive aspect, the gamification learning paradigm has been shown to enhance students' motivation to study. This is because the adoption of this learning paradigm necessitates active learning and group interaction on the part of the students. Furthermore, because the groups formed are small, interaction and communication within them will yield the best outcomes. This allows group members to discuss knowledge while maintaining a cooperative attitude. The sense of reciprocal reinforcement among group members can help students share information and achieve their goals of learning the topic being taught.

4. CONCLUSION

Based on the analyzed data, the study on the application of gamification using the Wordwall application to increase students' learning motivation concludes that the use of word walls can increase the learning motivation of class X RPL students of SMK Negeri 1 Cimahi in the learning of Computer Networks.

Using the gamification paradigm has been shown to improve student skills in the psychomotor element. This is because the goal of the gamification learning model is to boost student learning motivation, comprehension of the subject, and active participation of students while learning, and to provide quick feedback.

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5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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