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Using Gamification Applications to Increase The Student's Learning Activity in Digital Simulation Subjects

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ABSTRACT

The trial of face-to-face learning during the Covid-19 pandemic has become one of the changes in the world of education. one of the schools that implements is SMK Veteran 1 Sukoharjo. After two years of online learning, the trial of face-to-face learning presents many obstacles. one of the obstacles faced is that students are less focused on learning in the learning process, and students are less active in expressing opinions. The purpose of this study is to improve the effectiveness of learning for class X TBSM students at SMK Veteran 1 Sukoharjo by applying Gamification. The research method used is Class Action Research, with a rotation of three cycles, namely Pre-Cycle, Cycle I, and Cycle II, with the data analysis technique being Descriptive Quantitative using the Paired T-Test. The result of this study was to increase student activity in cycle II to 81.62% which was previously 63.24%
***Keywords**: activity of learning, students, gamification,*

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INTRODUCTION

Education in Indonesia encounters very good improvement and development. Several innovations have been implemented in the teaching and learning process. It has been researched by Rogantina (2017) that resulted in the conclusion that the use of technology can improve the quality of education, the learning process becomes more effective and efficient to facilitate the achievement of educational goals (Talkah & Muslih, 2021). The current era of all digital teachers are required to be more creative and innovative in carrying out the learning process. Especially now that the world is experiencing the Covid-19 pandemic. The countries in the world affected by the effects of Covid 19 have begun to set norms to control social and health conditions to efficiently manage and control the Covid-19 spread.

The impact of the Covid-19 pandemic triggered many influences and changes that were significant in various lines of life in Indonesia. The entire community is asked to respond to these various things to get a solution to every transition that occurred (Salsabila et al., 2020). One of the impacts experienced in Indonesia is that in the education field, the learning process in schools becomes constrained. Students and teachers cannot carry out the learning process in schools because of the government policy to conduct online learning. Online learning is a distance learning process between teachers and students using the internet network as a link (Pohan, 2020).

Covid-19 pandemic occurs in Indonesia for almost two years, the online learning process has begun to experience several obstacles namely inadequate infrastructure, uneven internet

networks, teacher control over the teaching and learning process, some parents or guardians who are not tech-savvy, creating the online learning process that is very hard to follow. In the end, technology, facilities and infrastructure must be adequate to achieve effectiveness and efficiency as well as a sense of comfort in the learning process becomes very important (Octafiana et al., 2018).

Government policy that allows students to carry out face-to-face or offline learning. The policy regulates few schools that are allowed to carry out face-to-face learning with direct monitoring from the government. Furthermore, the vaccination policy for teachers and students is also promoted to accelerate the face-to-face learning process. The government policy to implement face-to-face learning has begun to be implemented in Sukoharjo Regency.

SMK Veteran 1 Sukoharjo is one of the favorite vocational schools in Sukoharjo Regency. The implementation of the trial of limited face-to-face learning begins with students and teachers who are allowed to enter the school, which is 20% of the total teachers and students in the school. The limited face-to-face implementation is monitored directly by the Covid-19 Task Force team and officers the Sukoharjo Regency Health Office. The process of implementing face-to-face learning is required to use strict health protocols to reduce the Covid-19 virus spread.

The process of the implementation of face-to-face learning that begins to return after 2 years of conducting online learning that becomes the problems. The problem in the process of implementing face-to-face learning is that some students do not participate in online learning activities. Students are less active in participating in practical learning and there are still those who do not focus on learning activities, and the values of students who have not reached passing grade.

METHODS

The type of research used was Classroom Action Research (PTK) that was carried out to increase student activity in learning digital simulation by applying gamification with data analysis techniques using Quantitative Descriptive. The research design used was the Kemmis and Taggart Spiral model through four stages starting with planning, utilizing, observing and reflecting, and then returning to the planning stage. The implementation of this action was through two cycles, namely Cycle I and Cycle II. Data collection techniques used by observation with the subject of the study. Observations made using research instruments were student observation sheets with assessment using the Likert Scale, the answer range was expressed in the form of Very Active (4), Active (3), Moderately Active (2), and Less Active (1).

RESULTS AND DISCUSSION

Previous research conducted by Serly Wardana discussed the use of gamification in increasing student learning activities by producing a significant increase when taking action (Wardana & Sagoro, 2019). It is used as a differentiator in research conducted by researchers, as carried out at SMK Veteran 1 Sukoharjo. Based on the results of research from the Pre-Cycle, researchers made observations on 10th grade of TBSM students of SMK Veteran 1 Sukoharjo. The researcher observation process was carried out directly, by entering the classroom together with the teacher who teaches the subject of Simulation and Digital Communication. The observation process carried out by researchers consisted of *Visual Activity, Oral Activity, Writing Activity, Mental Activity* and *Emotional Activity*. During the observation process carried out by observers as well as researchers found that the level of student learning activity was quite low.

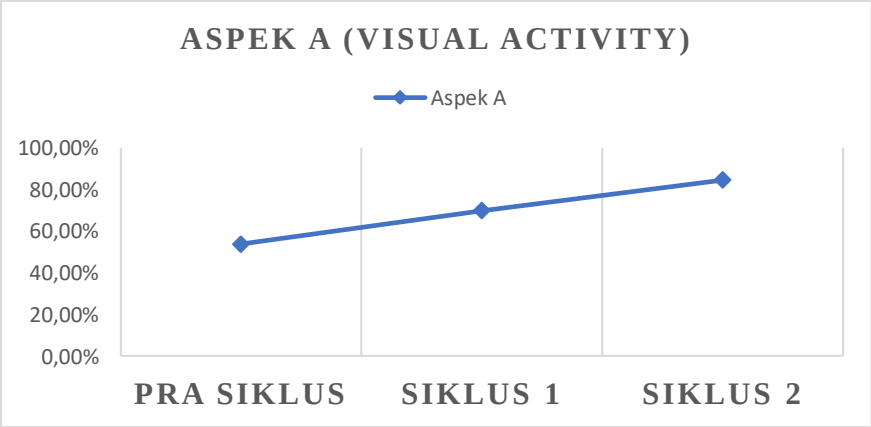

Diagram 1. Comparison of Visual Activity Aspect Data Results

Aspect A (*Visual Activity*) with some indicators related to the teacher, observing learning media in the form of videos and demonstrations carried out by the teacher. The results of comparison were obtained from PreCycle with a percentage of 53.68%, Cycle I with a percentage of 69.85% and Cycle II with a percentage of 85.56%. There is an increase in student learning activity by using gamification in the simulation subjects and digital communication.

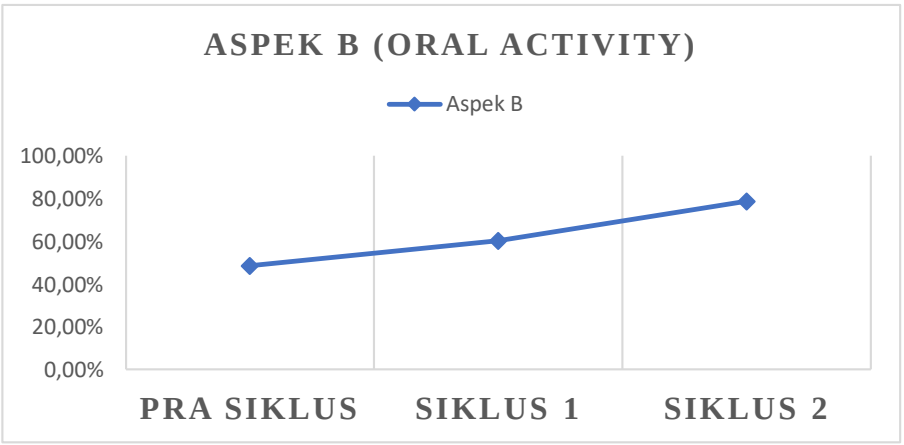

Diagram 2. Comparison of Oral Activity Aspect Data Results

Aspect B (*Oral Activity*) indicators assessed include expressing opinions, asking teachers and answering the questions from teachers. Thus, the results of the comparison were obtained from Pre-Cycle with a percentage of 48.53%, Cycle I with a percentage of 60.28% and Cycle II with a percentage of 78.68%. There was an increase in student learning activity by using gamification in simulation subjects and digital communication.

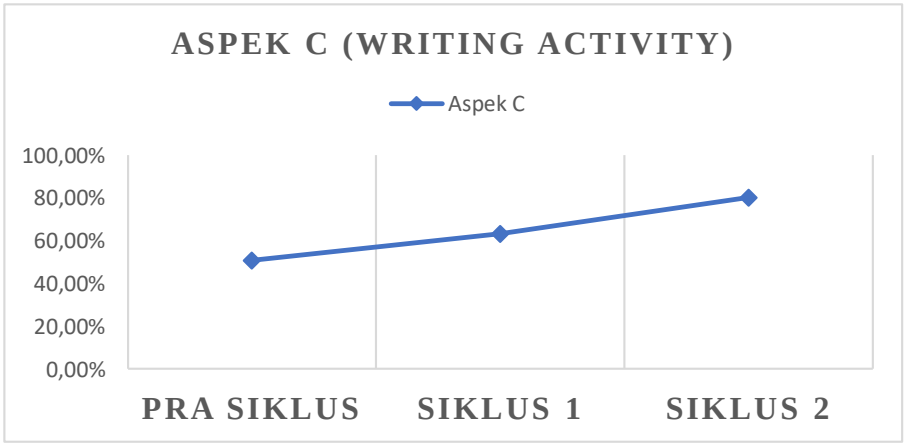

Diagram 3. Comparison of Writing Activity Aspect Data Results

Aspect C (*Writing Activity*) with the indicators assessed were recording with the material presented by the teacher, performing assignments and making summaries. Thus, the results of comparison were obtained from Pre-Cycle with a percentage of 50.74%, Cycle I with a percentage of 63.24% and Cycle II with a percentage of 80.15% and there was an increase in student learning activity using gamification in simulation subjects and digital communication.

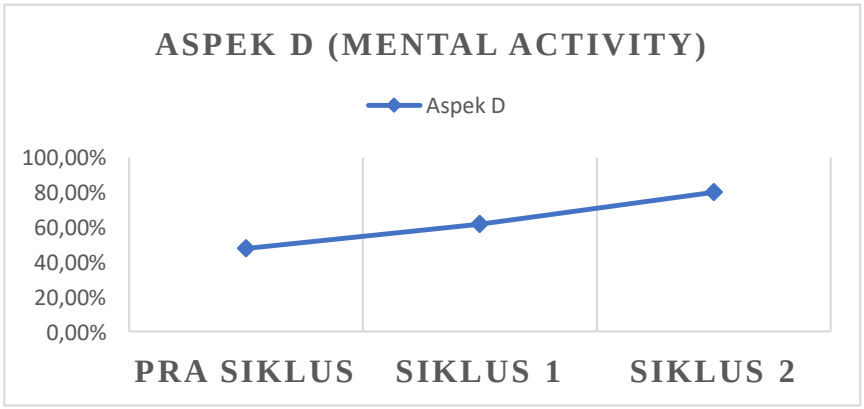

Diagram 4. Comparison of Mental Activity Aspect Data Results

Aspect D (*Mental Activity*) indicators assessed were solving problems, analyzing and making decisions. Thus, the results of comparison were obtained from Pre-Cycle with a percentage of 47.79%, Cycle I with a percentage of 61.76% and Cycle II with a percentage of 80.15% and there was an increase in student learning activity using gamification in simulation subjects and digital communication.

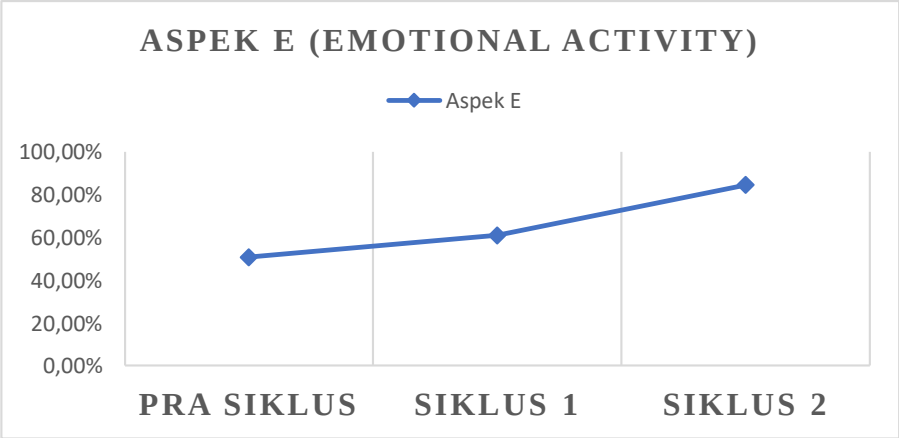

Diagram 5. Comparison of Emotional Activity Aspect Data Results

Aspect E (*Emotional Activity*) the indicators assessed were activities that cause a sense of pleasure and interest in students. The interest referred to in this indicator was the anntusias of students in following learning. Thus, the results of comparison were obtained from Pre-Cycle with a percentage of 50.74%, Cycle I with a percentage of 61.03% and Cycle II with a percentage of 84.56% and there was an increase in student learning activity using gamification in simulation subjects and digital communication.

It is proofed by the results of researcher data, that 50.29% of students or approximately 17 students were quite active in the learning process. The pre-cycle stage also explained that many students did not pay attention to the learning process and the delivery of material from the teacher. Furthermore, many students were also not focused when the teacher gave the directions and explanations of the material, especially the subject of Simulation and Digital Communication, only a few students paid the attention to the material delivered from the teacher.

Cycle I explained that researchers compiled a Learning Implementation Plan (RPP) with teachers who teach Digital Simulation and Communication subjects. After compiling the Learning Implementation Plan (RPP), researchers compiled a *pre-test* using *Kahoot*! as a learning medium. *Kahoot* is one of the gamification media used in learning methods. Media *Kahoot!* used at the beginning of learning to provide a stimulus to students to be excited and active in following the learning process. During the learning process, researchers made observations using observation sheets.

Before learning start, the teacher invites students to pray first. Furthermore, the teacher greeted every student in 10th grade of SMK Veteran 1 Sukoharjo. After the teacher has beaten the pupils, the teacher asks the students to take a Kahoot! pre-test. Some pupils appear to be eager to participate in gamified learning. This is because it is a new experience for 10th grade of TBSM students at SMK Veteran 1 Sukoharjo, and many pupils were unaware of the benefits of utilizing Kahoot! to study.

After gamification activities students started to get material delivered by the teacher. The stimulus provided from gamification started to make students active and pay attention to every learning process and material delivered by the teacher. In the first cycle, teachers used learning videos with the material Word manager application. It can be seen from the results of research conducted by researchers, that there was an increase in the percentage of student learning activity levels to 63.24%. Furthermore, researchers used a paired t-test using SPSS, obtained a t count result of 4.151 greater than the t table of 1.69236.

Table 2. Pre-Cycle and Cycle I Paired T Test Results

Pair 1	PRA_SIKLUS - SIKLUS_I	-2.588	3.636	.624	-3.857	-1.320	-4.151	33	.000

Furthermore, in Cycle I, researchers and teachers compiled Learning Implementation Plan (RPP) for simulation and digital communication subjects. Researchers prepared gamification media with the different media with the Cycle I. In Cycle II stage, researchers used *Quizizz* media. The reason is the different media from cycle I is because researchers want more varied learning so it will be more active in participating in learning.

The application of gamification to simulation and digital communication subjects can increase the students learning activeness. It can be proven by the results of studies conducted by researchers that showed the level of student learning activity increases compared to cycle I or the previous cycle. The results of the study from cycle II obtained results as much as 81.62% of the level of student learning activity increased in the 10t^{h} grade student of TBSM SMK Veteran 1 Sukoharjo.

Based on the data above, it can be seen that student learning activity in the implementation of learning in the subject of Simulation and Digital Communication in 10th grade of TBSM SMK Veteran 1 Sukoharjo that was carried out with 2 cycles. The application of Gamification to the subjects of Simulation and Digital Communication may increase student learning activity. Improvement can be obtained using observations of student learning activity. The results of the observation of student learning activity in the first cycle were 63.24% while in the second cycle it was 81.62%, while the results of pre-cycle observations were 50.29%. The application of gamification to the subject of Simulation and Digital Communication it increased student learning activity in10th grade of SMK Veteran 1 Sukoharjo.

There are results of a comparison of student learning activity as a whole as seen in the followingel table 3.

Table 3. Research Comparison Results

No	Cycle	Presentase (%)	Criterion
1	Pre-Cycle	50,29%	Moderately Active
2	Cycle I	63,24%	Active
3	Cycle II	81,62%	Very Active

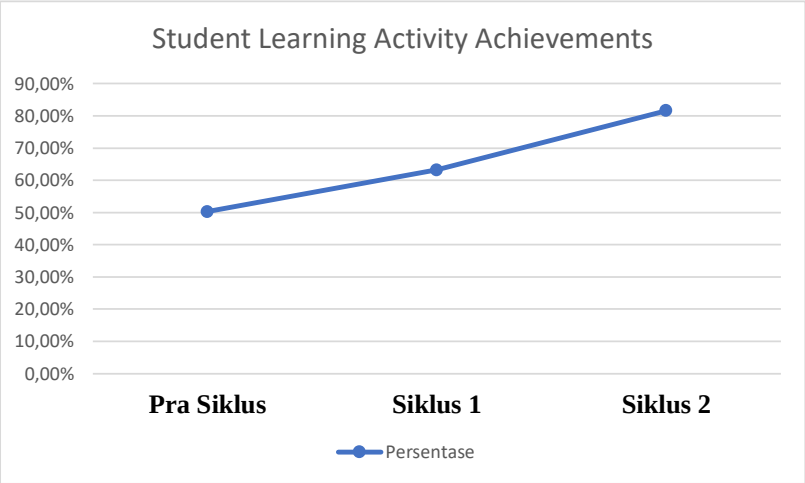

Diagram 6. Student Learning Activity Achievements

Table 4. Paired T-Test Results of Cycle I and Cycle II

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	SIKLUS_1 - SIKLUS_2	-3.676	3.328	.571	-4.838	-2.515	-6.442	33	.000

Based on the table above, the result of t count was greater than t table with the result t-count was 6.442 greater than t table by 1.69236. Viewed from the data above, student learning activity towards the subjects of Simulation and Digital Communication made students become active in the learning process. It can be seen from the criteria that students were active in participating in learning Simulation and Digital Communication. From Pr-Cycle to Cycle II stage, the percentage of student learning activity increased.

Research about student learning activity by using gamification in the subjects of Simulation and Digital Communication. This Class Action Research used student observation sheets to see an increase in student learning activity in the Word Management material for Digital Simulation subjects.

Table 5. Comparison of Aspects of Student Activity

No	ASPECTS	Pre-Cycle	Cycle I	Cycle II
1	Visual Activity	53,68%	69,85%	84,56%
2	Oral Activity	48,53%	60,29%	78,68%
3	Writing Activity	50,74%	63,24%	80,15%
4	Mental Activity	47,79%	61,76%	80,15%
5	Emotional Activity	50,74%	61,03%	84,56%

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Based on the table above, it can be explained that the results of the study had a comparison of increasing student learning activity with the application of gamification for each aspect starting from pre-cycle, cycle I and cycle II.

CONCLUSION

Based on the results, the use and application of gamification can increase the learning activity of 10th grade of TBSM students of SMK Veteran 1 Sukoharjo. It can increase student learning activity can be proven by student activity through the application of gamification by reaching the average of 63.24% (Active Criteria) in cycle I, then with teachers making improvements can increase activeness to 81.62% with very active criteria. The results of the paired t-test obtained the result of t-counting greater than t-table namely t-count of 6.442 with t- table of 1.69236.

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