jurnal kependidikan

by Kurnia Dirgantoro

Submission date: 25-Jan-2022 03:54PM (UTC+0700)
Submission ID: 1747748621
File name: 22755_Kurnia_Dirgantoro_jurnal_kependidikan_1055384_1619391674.docx (334.74K)
Word count: 7045
Character count: 40989

Jurnal Kependidikan:
Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran
https://e-journal.undikma.ac.id/index.php/jurnalkependidikan/index

Month-Year. Vol., No.
e-ISSN: 2442-7667
pp xx.
Email: jlppm@ikipmataram.ac.id

Is Moodle Gamification Effective in Reviewing Student's Motivation Related to Interest in Learning Online?

1* Kurnia Putri Sepdikasari Dirgantoro, 2 Jessica Elfani Bermuli, 3 Robert Harry Soesanto
1, 3 Department of Mathematics Education, Faculty of Education, Universitas Pelita Harapan
2 Department of Biology Education, Faculty of Education, Universitas Pelita Harapan
***Corresponding Author e-mail: kurnia.dirgantoro@uph.edu**

Abstract: Learning at the university level during the current pandemic is performed online. However, in practice, there are obstacles in the learning process. Students cannot meet face-to-face, and learning activities tend to be monotonous in online learning so that motivation and interest are factors that influence student learning motivation. Another factor is learning activity. Asynchronous learning is conducted by implementing gamification through LMS Moodle. Therefore, this study aims to determine the effectiveness of Moodle gamification on students' learning motivation related to online learning interest. The research subjects were selected with a purposive sampling technique, namely the class of 2018 (n=112), class of 2019 (n=98), and class of 2020 (n=60). The independent variable was the class of students, the moderator variable was students' interest, and the dependent variable was students' motivation. This study uses mixed methods. Quantitative data processing, using two-way Anova to see the main effect, interaction effect, and t-test to see a simple effect. The study finds that Moodle gamification is considered quite effective in motivating students regarding online learning interest. This result draws on survey data for 2018 2019 and 2020 students showing a "yes" answer to the question "Did gamification (e.g., level up, activity completion, and activity restriction) in Moodle motivate you during your major?" is 78.40%; 83.30%; and 90.91%. These results provide information that gamification increases student motivation. Suggestions for further research is to look at the engagement between students and gamification.

Article History
Received:
Revised:
Published:

Key Words :
Covid-19; gamification; learning activities; level up; purposive sampling.

How to Cite: First author., Second author., Third author, etc.. (20xx). The title. *Jurnal Kependidikan: Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran, vol*(no). doi:https://doi.org/10.33394/jk.vxxyyi

https://doi.org/10.33394/jk.vxxyyi

Introduction

Since March 2020, Covid-19 has entered and spread throughout Indonesia. The spread in Indonesia has not shown any decrease until June 2020, and it turns out that the rate of infection is increasing (Direktorat Pembelajaran dan Kemahasiswaan, Direktorat Jendral Pendidikan Tinggi, & Kementrian Pendidikan dan Kebudayaan RI, 2020). With these circumstances, the government takes preventive measures so that the campus does not become

Month-Year. Vol., No.
e-ISSN: 2442-7667
pp xx.
Email: jlppm@ikipmataram.ac.id

a new cluster in the spread of Covid-19 so that the Decision Letter regarding learning decisions in higher education is implemented online for theory courses. At the same time, the practice courses are attempted to be also conducted online (Direktorat Pembelajaran dan Kemahasiswaan, Direktorat Jendral Pendidikan Tinggi, & Kementrian Pendidikan dan Kebudayaan RI, 2020). Activities designed in online learning are organized with several provisions: 1) students do self-learning means that students initiate their learning. Learning is also performed with an online tutorial model, meaning that there is an interaction between lecturers/tutors and students through ICT-based media. Learning is synchronous or asynchronous; 2) teaching materials used in digital form that combine various forms, forms, media, and sources; 3) utilize ICT-based media; 4) ICT-based learning interactions (Direktorat Pembelajaran dan Kemahasiswaan, Direktorat Jendral Pendidikan Tinggi, & Kementrian Pendidikan dan Kebudayaan RI, 2020).

Since the government launched online learning, interactions between students and lecturers can still occur through synchronous and asynchronous activities using ICT media. However synchronous activities cannot be performed continuously. Students who joined the Faculty of Education UPH are from almost all regions in Indonesia. Students are recorded as living both in the city and in the remote area. In addition, students also come from various levels of the economy, namely some from the well-off, middle to lower. Based on the reality that occurred in online lectures in March to April 2020 ago, students provide learning evaluations and explain some obstacles experienced, such as network instability in their respective regions, difficulty getting a good network, electricity conditions that are not always on, to limitations in buying quotas for the learning process.

Based on these circumstances, synchronous and asynchronous activities are performed with a ratio of 30%:70% successively. This is in line with the four learning provisions directed by the government towards online learning for universities. Asynchronous learning is conducted by utilizing several forms of learning management systems (LMS) (Direktorat Pembelajaran dan Kemahasiswaan, Direktorat Jendral Pendidikan Tinggi, & Kementrian Pendidikan dan Kebudayaan RI, 2020). The LMS form developed by UPH is Moodle LMS. Moodle's advantage is that it has a gamification system with several parts such as points or numbers earned, level or rank increases, badges and challenges that can be done by learners (Barata et al, 2013). Kyewski dan Krämer (2018) explained the gamification in online learning in higher education can influence learners' motivation, activities, and performance. Moreover, Domínguez et al. (2013) as well as Seaborn and Fels (2015) explained that gamification in a non-game learning, is considered to increase the interest of learners.

Increasing the proportion of asynchronous learning to 70% can cause learning to be less effective if it only requires students to study independently without being supervised by the lecturer concerned. The Learning Management System (LMS) has features that can be managed by lecturers so that students can study lecture materials interactively and structured with a restriction system and lecturers can monitor the progress of student activities (Barata et al, 2013). This can be an alternative to see the development of abilities and application of knowledge that has been obtained by students. In addition, the Moodle LMS also has an assignment submission feature that can be set time and collection limits, discussion forums and interactive videos that can make students motivated to quickly complete assignments or activities to add points that cause level up when students (Barata et al, 2013). In college, the use of gamification can motivate the completion of advanced academic assignments, challenge students, and encourage learning motivation in an online learning environment (Kaufmann,

2018). Thus, the concept of gamification can be used as a way to increase motivation and interest through activities that are not boring and enthusiastic in accessing activities that have been designed by lecturers for students (Kyewski & Krämer, 2018), in this condition gamification is used in LMS Moodle.

In online learning, several essential components greatly influence the learning process in the classroom. Motivation and interest are two things that are interconnected. Selvi (2010) explained that motivation is a driver that can move students and increase their activeness in learning. Further, Selvi (2010) explains that relevant variables and significantly influential in learning are motivations. In line with that, Lee and Martin (2017) explain that motivation can provide encouragement to the application in an action that is in accordance with the expected direction. In addition to motivation, students' learning interests also need to get special attention. Hidi (2006) explains that interest is an important variable of motivation that influences learning and achievement. Furthermore, it is said that interest refers to involvement in a long-lasting period concerning an object, event, or thought (Hidi, 2006). Thus, when viewed correlation, interest encourages or supports that someone is motivated in doing a job.

Based on the exposure of gamification, motivation and interest, there are genuine relationships. Interest becomes a driver for learners to continue to be motivated in working on and completing activities that lecturers have designed and the progress is contained in a management system called gamification. Thus, this study aims to determine the effectiveness of Moodle gamification in student motivational reviews related to interest in online learning. The research is specifically to see students the effectiveness of Moodle gamification in prospective teachers from three different study programs, namely Primary School Teacher Education (PGSD), Mathematics Education and Biological Education.

Research Method

This research was conducted at FIP-TC UPH by taking research subjects using purposive sampling techniques, namely the class of 2018 (n = 112), class of 2019 (n = 98), and the class of 2020 (n = 60) consisting of students of the Mathematics Education Study Program, Biological Education, Indonesian Language Education, and Primary School Teacher Education. The reason for the selection of the research subject is based on treatment in the form of gamification through LMS Moodle during the course in one semester. The variables in this study consisted of one independent variable (student class), one moderator variable (interest), and one dependent variable (motivation). This study was conducted to review whether the differences in the class of students in an interest group will result in a difference in terms of motivation when given gamification as a learning activity. Therefore, the research design used is a factorial design of 2 x 3 (Table 1).

Table 1. Research Design

Interest (B)	Cohort (A)		
	2018 (A1)	2019 (A2)	2020 (A3)
High (B1)	A1B1	A2B1	A3B1
Low (B2)	A1B2	A2B2	A3B2

This research is divided into three stages, namely: planning, implementation, and reporting. At the planning stage, researchers compiled instruments in the form of Likert scale questionnaires and open

questions to see students' interests and motivations. At the implementation stage, the researchers distributed both questionnaires to be filled out by the students concerned. After that, the data in the form of the results of filling both questionnaires will be processed and analyzed statistically using SPSS 16.0. Furthermore, at the reporting stage, the results of the analysis that has been made.

The type of research used is mixed methods, where the results will be studied quantitatively and qualitatively. Quantitatively, this study uses two-way Anova according to the design given above to see the main effect, interaction effect, and further tests in the form of t-test to see simple effect. Qualitatively, this study will interpret the results of students' exposure to open questions in motivational questionnaires. The motivation questionnaire used in this study is part of MSLQ (Motivation Strategies for Learning Questionnaire). The MSLQ questionnaire was developed by the National Center for Research to Improve Postsecondary Teaching and Learning and the School of Education at the University of Michigan (Meijs, et al., 2019). The questionnaire in this study consisted of 8 closed statements in which the initial 4 statements described intrinsic goal orientation, while the next 4 statements described extrinsic goal orientation. The orientation of intrinsic purpose relates to the extent to which students perceive themselves to participate in assignments for reasons such as challenges, curiosities, mastery. This goal orientation indicates that a student's participation in an assignment is the goal of itself, not just as a tool achieving goals. Statements on the orientation of intrinsic objectives include: (1) in online learning, I prefer lecture materials that challenge me so that I can learn new things, (2) in online learning, I prefer lecture material that arouses my curiosity, even if the material is difficult to learn, (3) the thing that most increases my satisfaction in this course is trying to understand the whole content , and (4) when I have the opportunity to learn during online learning, I choose to do the task given even though it does not guarantee good grades because there are things I can learn from the task.

It is expected that through mixed methods approach, the resulting findings are more accurate to provide opportunities for further research to be carried out. The research flowchart can see in Figure 1.

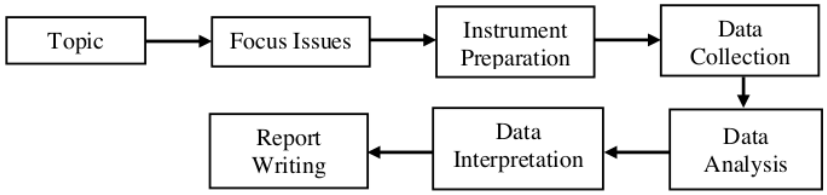

Figure 1. Research Flowchart

Gamification is defined as the use of game design elements in a non-gaming context (Mese & Dursun). The system aims to use game-like elements to provide a gaming experience for its users (Thiebes, Lins, & Basten, 2014; Landers, 2018). In education, gamification aims to motivate and engage students, improve student performance and training, and change unwanted behavior (Huotari & Hamari, 2012; Seaborn & Fels, 2015). The application of gamification in online learning can be made through Learning Management System (LMS). Learning Management System (LMS) is an E-learning platform that is a support system in the management of learning activities that combines elements of computing and support in learning (Sriratnasari, Wang, & Kaburuan, 2019). Rahardja et al. (2018) stated that the use of gamification in LMS iDu (iLearning Education) can maximize learning, make the learning process more enjoyable, increase learning motivation, develop mindset and creativity, and increase students' activeness in doing tasks. In Moodle gamification, there are several criteria such as Level Up, Completion Bar, Activity Restriction and so on. Specifically, researchers used Level Up as a gamification feature in LMS Moodle. Figure 2 exposed the interface of the

Month-Year. Vol., No.
e-ISSN: 2442-7667
pp xx.
Email: jlppm@ikipmataram.ac.id

Level Up features based on lecturer's perspective. From the interface, it could be seen that the rank, level, total achievement score, and the progress of each participant were displayed.

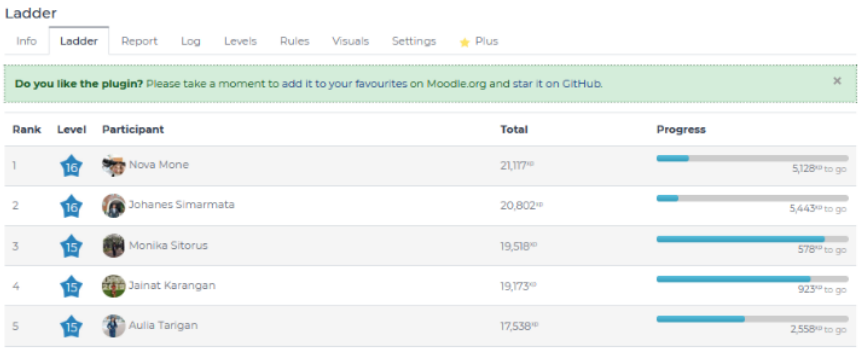

Figure 2. Level Up Interface on LMS Moodle

The following image as Figure 3 showed the progress of each students in completing the activities provided at LMS Moodle, which also determined the Level Up of students. For the information, the green sign marked the completed tasks, while the blue one marked the incomplete tasks. If the students succeed in finishing the incomplete task, it would turn into the green sign, and it would automatically increase the progress, which impacted their rank.

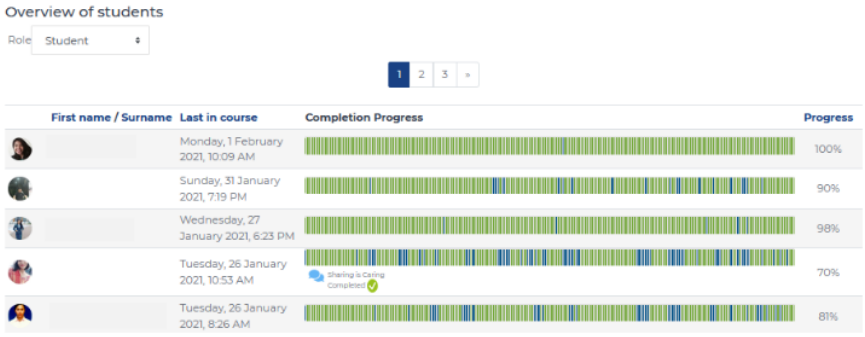

Figure 3. Students' Completion Progress

Result and Discussion

Results

Month-Year. Vol., No.
e-ISSN: 2442-7667
pp xx.
Email: jlppm@ikipmataram.ac.id

This research was conducted in the 2020/2021 school year even semester involving three generations in the Faculty of Education UPH, namely the class of 2018, 2019, and 2020. Samples taken from each generation showed the application of Moodle gamification in each learning process. In Table 2 shows descriptive statistical results data on student interests and motivations taken from each class sample.

Table 2. Descriptive Statistics

Aspects		Cohort		
		2018	2019	2020
Interest	Number of students	112	98	60
	Mean	19,68	19,72	21,52
	Standard Deviation	3,095	3,003	3,213
	Maximum	25	26	27
	Minimum	12	13	14
Motivation	Number of students	112	98	60
	Mean	24,07	24,09	25,83
	Standard Deviation	2,510	3,123	3,152
	Maximum	30	31	32
	Minimum	19	18	19

From Table 2, students' interest and motivation are decreasing in the older generation. Successively, the maximum number of students' interests and motivations is found in first year students or students of the class of 2020, which is 27 while the lowest in third year students or students of the class of 2018, which is as much as 25.

Before conducting further statistical analysis, students of the research subjects are first divided into high interest and low interest categories based on each class. Division is done normatively [31] with procedures:

Low : $X < (\bar{x} - s)$
High : $(\bar{x} + s) \leq X$

The calculation will result in the distribution of research samples obtained as found in the Table 3. Table 3 shows the variation in the number of samples from each cohort. Based on samples from each cohort, the data shows high and low of interest of each student in each cohort.

Table 3. Research Sample Distribution

Interest	Cohort		
	2018 (n = 112)	2019 (n = 98)	2020 (n = 60)
Interest high	18 students	20 students	13 students
Interest low	19 students	10 students	9 students

After getting grouped based on student interest, the next step is collecting student learning motivation data based on that category. Learning motivation data obtained through the

filling of learning motivation instruments by the three groups of students. Table 4 presents descriptive of student motivation score based on interest category (high or low).

Table 4. Descriptive Student Motivation Score by Interest Category

Student' Cohort	Interest Category	Mean	Std. Deviasi	n
2018	High	26.17	3.944	18
	Low	23.26	2.557	19
	Total	24.68	3.575	37
2019	High	27.25	3.024	20
	Low	22.70	2.214	10
	Total	25.73	3.503	30
2020	High	28.85	1.725	13
	Low	22.11	2.421	9
	Total	26.09	3.927	22
Total	High	27.27	3.250	51
	Low	22.84	2.422	38
	Total	25.38	3.651	89

Furthermore, the data in the form of motivation score is analyzed statistically with SPSS 16.0 using a two-way Anova test, by first conducting normality test and homogeneity test. The normality test was conducted using Kolmogorov-Smirnov, and obtained the results in Table 5, where the value of Sig. > 0.05 which means that the learning independence data comes from a normal distributed population.

Table 5. Kolmogorov-Smirnov Normality Test Results

Cohort	Sig.	Conclusion
2018	0,056	Normally distributed data
2019	0,087	Normally distributed data
2020	0,200	Normally distributed data

The next step is to perform a homogeneity test. Homogeneity test is done using Levene's Test and obtained a Sig value. 0.06 > 0.05 indicating that the data variance is homogeneous. Since the normality and homogeneity tests were met, the hypothesis test was continued using a two-way Anova test. The results in Table 6 show that in terms of generation, the value of Sig. = 0.621 > 0.05 which means there is no significant difference in learning motivation between students of the class of 2018, 2019, and 2020 reviewed from their Interest.

Table 6. Anova Two-Way Overview

Variance Source	Sig.	Conclusion
Cohort	0,621	Insignificant
Interest	0,000	-
Cohort*Interest	0,054	Insignificant

Then in terms of interaction between the generation and Interest students to the motivation of learning, the results in Table 6 show the value of Sig. = 0.054 > 0.05 which

Month-Year. Vol., No.
e-ISSN: 2442-7667
pp xx.
Email: jlppm@ikipmataram.ac.id

means that there is no interaction between the generation and interest in determining the motivation of student learning by applying gamification. But if we look further this value is close to the level of significance so it needs to be observed from an open question.

Extrinsic goal orientation complements the orientation of intrinsic goals, relating to the extent to which students view themselves to participate in assignments for reasons such as grades, awards, performance, evaluation by others, and competition. That is, the student's primary concern is related to issues not directly related to the task itself (such as grades, awards, comparing one's performance to the performance of others). The statement on the orientation of extrinsic goals includes: (5) getting good grades in lectures is a satisfactory thing for me at the moment, (6) the important thing for me is to increase the average score that I get so that what concerns me in this class is getting good academic achievements, (7) if I can afford it, I want to get better grades in the lecture compared to other students , and (8) I want to do my best in this lecture because it is important for me to show my skills to my family, friends and lecturers. Table 7 is a description of the average data for each item of statement from the motivation questionnaire distributed to students.

Table 7 shows that the statement that has the highest average is question no. 4, which shows “When I have the opportunity to learn during online learning, I choose to do the task given even though it does not guarantee good grades because there are things I can learn from the task". If re-described about the meaning of the sentence is in general students who have interest high or low awareness that doing the task is not just for value but is a meaningful learning process. On the contrary, the lowest average is obtained from statement 6: "The important thing for me is to increase the average score that I get so that what concerns me in this class is getting good academic achievement "and statement 8: "I want to do my best in this lecture because itis important for me to show my ability to my family, friends and lecturers". If viewed based on these two statements, then the extrinsic motivation for students is relatively low so it can be said that students consider their academic achievement and recognition from outsiders not to be necessary.

Table 7. Average Score on Motivation Questionnaire

Cohort	Interest Category	Average Score on Intrinsic Goal Orientation					Average Score on Extrinsic Goal Orientation				
		Que. 1	Que. 2	Que. 3	Que. 4	Total	Que. 5	Que. 6	Que. 7	Que. 8	Total
2018	Low	2.70	2.80	2.85	3.25	2.90	3.15	2.60	2.60	2.15	3.15
	High	3.67	3.61	3.50	3.67	3.61	3.22	2.72	2.83	2.94	3.22
2019	Low	2.70	3.00	2.90	3.10	2.93	3.10	2.50	3.00	2.40	3.10
	High	3.60	3.65	3.65	3.75	3.66	3.25	3.05	3.35	2.95	3.25
2020	Low	2.56	2.44	2.78	3.44	2.81	2.56	2.67	2.67	3.00	2.56
	High	3.85	3.85	3.92	3.77	3.85	3.54	3.08	3.31	3.54	3.54
Total	Low	2.74	2.84	2.92	3.34	2.96	3.08	2.66	2.79	2.47	3.08
	High	3.68	3.68	3.66	3.72	3.69	3.3	2.92	3.14	3.08	3.30

In addition to closed statements, motivational questionnaires also have two open questions related to gamification, namely 1) Does gamification (example: level up, activity completion, and restriction activity) in Moodle motivate you during your lectures? 2) What

motivates you to complete gamification (example: level up, activity completion, and restriction activity) in your Moodle?.

Question 1. Does gamification (example: level up, activity completion, and restriction activity) in Moodle motivate you during your course?

In statement 1, the data shows that students provide diverse responses. Some students answered "yes" and some people replied "no". Figure 5 here is a diagram showing the percentage of student response.

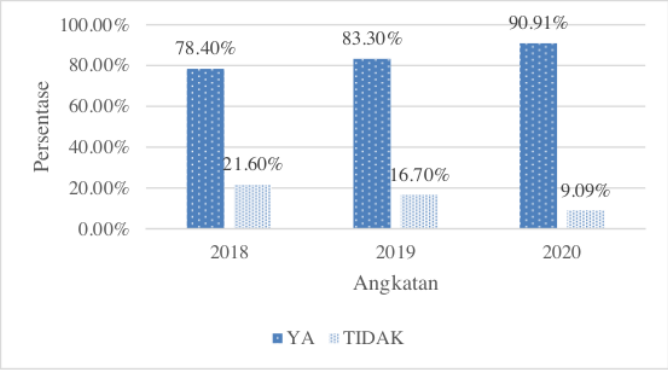

Figure 4. Student Response

Based on Figure 5, it appears that the percentage of students who answer "Yes" is getting higher as the younger cohort students, and vice versa. It means that when viewed from the open-ended question, the first-year students have higher motivation compared to second and third-year students. This is in line with descriptive statistical results, but the difference is not significant.

If viewed, then the percentage of students who are motivated in learning because of Moodle gamification is 83.2%. Students feel that Moodle's gamification makes learning more interesting and challenging. Students become more active and passionate in participating in every learning activity in Moodle. Students listen to videos and learning materials voluntarily and return to access them when they do not understand. This means students are challenged to be more independent in managing their learning. In addition, students feel they are involved in a "game" so they want to complete the mission as best they can. Students want to be the best, so they try to raise their score and reach the next level. Students are encouraged to be able to divide their time well and complete tasks faster. With Moodle gamification, students also feel more aware of every new activity and task in Moodle, becoming more structured in learning and responsible for the task. The learning that followed also felt not too rigid and there was satisfaction when the students had completed the activities given.

Of the overall data obtained, 16.8% of students responded that gamification in Moodle did not motivate them in learning. Most students replied that they were not focused on Moodle's gamification. Students are more focused on learning activities, so they only follow the activities in Moodle. There are students who are less interested because the student thinks the most important thing for him is the thing that is learned and obtained in the lecture. It was found that some students who already seemed unmotivated because of the learning that took place online

and there are also students who do not have interest in the course. Some students initially have motivation, but the student sees that Level Up which is part of the gamification is only a place to raise the rankings only and not to a quality response, helpful, and activities that can help other fellow students to understand the material.

Question 2. What motivates you to complete gamification (example: level up, activity completion, and restriction activity) in your Moodle?

In question 2, found mixed answers from students of the research subjects. Based on the data obtained, some students are motivated and who are not motivated. Most students are motivated to complete activities at Moodle to complete all activities and level up. Students also showed pride when ranked top. Students are also happy when they can complete every activity that has been scheduled during the learning so that they can be more effective in making the most of their time. In addition, students are also motivated to be able to gain new knowledge and understand the concepts and materials as a whole. Students are also motivated to be able to train themselves disciplined, more punctual and do the best possible responsibilities. Some students are motivated to solve difficult problems and then teach them to other friends. There are also students who have the motivation to give the best of themselves.

For students who feel unmotivated, most students give the reason that because every activity in Moodle is their duty and responsibility in the lecture. In addition, there are also students who do not pay much attention to gamification activities because the student considers gamification is not the most important thing. Another reason why students are not motivated is that the student has network problems because the network in the area where he lives is unstable so that the student is not motivated to follow Moodle gamification.

Discussion

The key to successful online learning lies in the interactions that are established during the process (Azwar, 2013). Activity planning in online learning is centered on the content to be transferred and needs to consider the elements of interaction that occur (Lowenthal & Moore, 2020). Through the power generated by the interaction of learning with careful and optimal planning, the learning atmosphere becomes communicative and engaging to improve learning outcomes (Ferri, Grifoni, & Guzzo, 2020) motivation as one of the main challenges faced in the field of teaching (Lowenthal & Moore, 2020; Bernard, et al., 2009). In general, the impact of online learning in times of crisis is seen from the loss of instructional time, the readiness of educators in supporting digital-based learning, as well as assurance of the continuity of student learning at home (Schleicher, 2020). In fact, the impact that is felt is the need for the role of parents as one of the stakeholders who help the effectiveness of online learning (Aji, 2020).

In the learning process, every educator needs to look carefully at the motivation of the learner. Similarly, when learning is conducted online. Sur, Hasanah and Mustofa (2020) explained that motivation is what students need in online learning in order to increase their passion and passion for learning. Activities carried out during online learning, need to be varied. If online learning is done the same as learning activities in the classroom in general, then there is a tendency that students will feel bored (Sur, Hasanah, & Mustofa, 2020). Therefore, students of research subjects are given activities in the form of gamification in Moodle LMS during online learning.

Gamification applied during online learning in the form of level up, activity completion, and restriction activity. The gamification is an interconnected activity. For example, when students are asked to do three activities such as downloading materials, watching a given video, and then giving questions or opinions after reading and understanding the material. The three activities are arranged on LMS Moodle with restriction activity method or restricted activity so that students can not submit questions or opinions if they have not watched the video while the video watching activity cannot be done if the student has not downloaded the material provided. Then when all learning activities are successfully carried out gradually, then the system will determine that the student is declared to have completed the activity (activity completion) so as to get points that can make the student level increase and the student gets a badge. This is in line with the opinions of Sriratnasari, Wang and Kaburuan (2019) which explains that the gamification system can attract the attention of learners due to the presence of points, badges, leaderboard system that shows the order of rankings and some other elements. The presence of gamification in online learning activities is an alternative for learners that positively influence cognitive engagement (Lo & Hew, 2018).

In addition, through the response delivered by students, several keywords were obtained that motivated them with this gamification, namely active involvement, the atmosphere of learning to be interesting, and the presence of a feeling of excitement in following the learning. The acquisition of badges or badges is also one of the reasons students are motivated to follow the learning. This is in line with research (Hakulinen & Auvinen, 2014) which concludes that badges can affect the behavior of learners even when they have no impact on judgment. Therefore, it appears that online learning with gamification can improve engagement and learning atmosphere.

In online learning, students are not only required to have good learning qualities, but students are also expected to be more independent to meet their learning needs. Based on the results of research conducted by Sur, Hasanah and Mustofa (2020) shows that students feel more independent because they need to process and source other materials for learning and have a more customizable time to repeat and relearn the materials that have been given. In some previous studies, it has also been stated that gamification can increase the presence, participation, and awareness to download material (Barata et al, 2013). Activities to increase attendance, participation and awareness to download this material in accordance with the results data in the open statement that students can download and access any lecture materials if they do not understand the materials provided. This activity is also in order to increase the gamification score of each student. This is in line with Zheng and Ferreira's (2020) explained that gamification is one of the supportive atmosphere and involvement of learners in online learning.

Nieto-Escamez and Roldán-Tapia's (2021) stated that gamification is seen as an innovative, efficient, and fun strategy and activity to apply to the learning world, especially in the current pandemic. Gamification activities cause students to be more challenged to do every activity given. In addition to being challenged and fun, gamification activities are also considered to help students to do their tasks and responsibilities with satisfaction. This is in accordance with the research results of Segura-Robles et al (2020) explained that gamification can help students enjoy the learning process so that the level of satisfaction in learning is increased.

In addition, the positive impact of gamification applied during the online learning process shows that students are more motivated to be able to work on difficult questions. This

is in accordance with what students expressed on open questions as well as Iosup and Epema (2014) displayed that gamification has an effect on increasing participation in challenging tasks. These questions are given to students in a series of activities arranged in Moodle with a model of workmanship in detail. Furthermore, the results of the Segura-Robles et al (2020) stated that with the gamification of academic performance of the student person has improved although not significantly.

Gamification and motivation have a significant connection in online learning. If further reviewed on student motivation, the descriptive results of the average score in Table 7 show that the intrinsic motivation of students is good, students already understand that learning is necessary not only for grades but to prepare them in the future. While the extrinsic motivation to get recognition from the outside is not yet maximal. Buckley and Doyle's (2014) research to 100 students who carry out gamification gives the result that although in general gamification has a positive impact, the impact on student participation varies depending on whether the student is intrinsically motivated extrinsic. While the results of the study Ferriz-Valero et al (2020) revealed that gamification is beneficial in improving academic performance and extrinsic motivation at the university level although there is no increase in intrinsic motivation.

Based on descriptive research data, student interest and motivation decreased at the age of Cohort from the study subject students. Student interest and motivation is highest in first-year students, and lowest in third-year students. However, through the results of statistical tests using Anova, there were no significant differences related to the motivation of the three Cohort students who were treated in the form of gamification implementation in learning. This fact gives the possibility of two tendencies: whether most students are motivated or not motivated by this gamification. The review of open-ended questions found that 83.2% of all students expressed motivation by mification in online learning. The findings are supported by research which concludes that gamification has a positive impact on the motivation of learners in the midst of a pandemic situation (Park & Kim, 2021).

Based on the data of the research results descriptively, interest and motivation of students are decreasing in cohort that has been before. Student interest and motivation is highest in first-year students, and lowest in third-yea students. However, statistical tests found that this difference was insignificant. That is, there is no significant difference in learning motivation bet een cohort students 2018, 2019, and 2020 reviewed from their Interest. Statistical tests also showed no interaction between hort and interest in determining students' learning motivation by applying gamification. Based on the results of the motivation questionnaire, it was found that the intrinsic motivation of students has been good, students already understand that learning is necessary not only for grades but to prepare them in the future. While the extrinsic motivation to get recognition from the outside is not yet maximized.

In the learning process, motivation plays an important role. Educators need to maintain and even increase motivation in learning (Lamprinou & Paraskeva, 2015). The motivation can be increased by gamification activities that are packaged in such a way in learning. Furthermore, Rakasiwi and Muhtadi (2021) stated that attractive learning media can foster students' motivation. Gamification conducted in the learning process, assessed to increase intrinsic and eccentric motivation (Lamprinou & Paraskeva, 2015). Further, Lamprinou and Paraskeva (2015) explained that in applying gamification in learning, a learning designer needs to pay attention to several aspects, such as motivation, meaningful choices, structure, potential

conflicts and factors "fun" or fun activities. These aspects are necessary so that every message in the learning can be conveyed properly.

In online learning systems, there is a lot of space to limit the movement and direct interaction between educators to students and students to others. However, interacting with each other remains important in a learning process (Sriratnasari, Wang, & Kaburuan, 2019). In online learning, gamification can encourage the motivation that the learner has. Sriratnasari, Wang and Kaburuan (2019) explained that gamification can increase motivation because gamification can play an important role as a communication bridge in learning that can be used as a partner in teaching learners, interactive learning promotion agents, cognitive contributors, performance, and normative, as well as institutional support systems. It shows the role of gamification that can connect between educators and students. In addition, gamification also aims to get students to learn and increase motivation. Buckley and Doyle (2014) explained that gamification can lead to competition that can be a tool to motivate students to follow the learning well.

Based on survey data for cohort students 2018, 2019, and 2020 in Figure 5, shows students who answered "Yes" to the question "Does gamification (example: level up, activity completion, and restriction activity) in Moodle motivate you during your course? " Consecutively is 78.40%; 83,30%; and 90.91%. The results showed that >50% of students from each cohort agreed on gamification activities in Moodle can motivate students in the learning process. These results are in line with the results of other studies that explain that gamification techniques are important and highly motivating for students in learning (Buckley & Doyle, 2014; Lamprinou & Paraskeva, 2015; Figueiredo & García-Peñalvo, 2020). Gamification can also motivate learners in the learning process andake students actively participate in all activities and challenges provided (Figueiredo & García-Peñalvo, 2020). Thus, the gamification applied in online learning is currently considered effective enough to increase motivation related to Interest.

Conclusion

This study concludes that Moodle gamification is considered quite effective in motivating students related to interest in online learning. These results are seen from survey data for Cohort 2018, 2019, and 2020 students that show successive "yes" answers to the question "Does gamification (e.g. level up, activity completion, and restriction activity) in Moodle motivate you during your course? " is 78.40%; 83,30%; and 90.91%.

Acknowledgement

The researchers want to express gratitude to the Universitas Pelita Harapan, for all its support, both in terms of research permits and funding this research. This research is carried out through a performance contract with numbers P-043-FIP/II/2021, February 16th, 2021.

References

Aji, R. H. (2020). Dampak Covid-19 pada Pendidikan di Indonesia: Sekolah, Keterampilan, dan Proses Pembelajaran (The Impact of Covid-19 on Education in Indonesia: Schools, Skills, and the Learning Process). *Salam: Jurnal Sosial dan Budaya Syar-i, VII*(5), 395-402. https://doi.org/10.15408/sjsbs.v7i5.15314

Azwar, S. (2013). *Penyusunan skala psikologi (Psychological Scale Preparation)*. Yogyakarta, Indonesia: Pustaka Belajar.

Barata, G., Gama, S., Jorge, J., & Gonçalves, D. (2013). Improving Participation and Learning with Gamification. *Proceedings of the First International Conference on Gameful Design, Research, and Applications* (pp. 10-17). Gamification 2013. https://doi.org/10.1145/2583008.2583010

Bernard, R. M., Abrami, P. C., Borokhovski, E., Wade, C. A., Tamim, R. M., Surkes, M. A., & Bethel, E. C. (2009). A Meta-Analysis of Three Types of Interaction Treatments in Distance Education. *Review of Education Research, LXXIX*(3), 1243-1289. https://doi.org/10.3102/0034654309333844

Buckley, P., & Doyle, E. (2014). Gamification and Student Motivation. *Interactive Learning Environments, XXIV*(6), 1162-1175. https://doi.org/10.1080/10494820.2014.964263

Direktorat Pembelajaran dan Kemahasiswaan, Direktorat Jendral Pendidikan Tinggi, & Kementrian Pendidikan dan Kebudayaan RI. (2020). *Buku Panduan Penyelenggaraan Pembelajaran Semester Gasal 2020/2021 di Perguruan Tinggi (Guidelines for the Implementation of Odd Semester 2020/2021 Learning in Higher Education)*. Jakarta, Indonesia: Direktorat Jenderal Pendidikan Tinggi Kemdikbud RI. Retrieved from https://spada.kemdikbud.go.id/static/Panduan%20Penyelenggaraan%20Semester%20Gasal%202020-2021%20di%20PT%20Edisi%20I.pdf

Domínguez, A., Saenz-de-Navarrete, J., de-Marcos, L., Fernández-Sanz, L., Pagés, C., & Martínez-Herráiz, J.-J. (2013). Gamifying Learning Experiences: Practical Implications and Outcomes. *Computers & Education, LXIII*, 380-392. https://doi.org/10.1016/j.compedu.2012.12.020

Ferri, F., Grifoni, P., & Guzzo, T. (2020). Online Learning and Emergency Remote Teaching: Opportunities and Challenges in Emergency Situations. *Societies, X*(4), 1-18. https://doi.org/10.3390/soc10040086

Ferriz-Valero, A., Østerlie, O., Martínez, S. G., & García-Jaén, M. (2020). Gamification in Physical Education: Evaluation of Impact on Motivation and Academic Performance within Higher Education. *International Journal of Environmental Research and Public Health, XVII*(12), 1-16. https://doi.org/10.3390/ijerph17124465

Figueiredo, J., & García-Peñalvo, F. J. (2020). Increasing student motivation in computer programming with gamification. *2020 IEEE Global Engineering Education Conference (EDUCON)* (pp. 997-1000). Porto: IEEE. https://doi.org/10.1109/educon45650.2020.9125283

Hakulinen, L., & Auvinen, T. (2014). The Effect of Gamification on Students with Different Achievement Goal Orientations. *International Conference on Teaching and Learning in Computing and Engineering, LaTiCE 2014*, (pp. 9-16). Kuching. https://doi.org/10.1109/LaTiCE.2014.10

Hidi, S. (2006). Interest: A Unique Motivational Variable. *Educational Research Review, I*(2), 69-82. https://doi.org/10.1016/j.edurev.2006.09.001

Huotari, K., & Hamari, J. (2012). Defining Gamification - A Service Marketing Perspective. *Proceeding of the 16th International Academic MindTrek Conference*, (pp. 17-22). https://doi.org/10.9743/jir.2018.12

Iosup, A., & Epema, D. (2014). An Experience Report on Using Gamification in Technical Higher Education. *Proceedings of the 45th ACM technical symposium on Computer science education*, (pp. 27-32). https://doi.org/10.1145/2538862.2538899

Kaufmann, D. A. (2018). Reflection: Benefits of Gamification in Online Higher Education. *Journal of Instructional Research, VII*(1), 125-132. https://doi.org/10.9743/jir.2018.12

Kyewski, E., & Krämer, N. C. (2018). To Gamify or Not to Gamify? An Experimental Field Study of The Influence of Badges on Motivation, Activity, and Performance in an Online Learning Course. *Computers and Education, CXVIII*, 25-37. https://doi.org/10.1016/j.compedu.2017.11.006

Lamprinou, D., & Paraskeva, F. (2015). Gamification Design Framework Based on SDT for Student Motivation. *2015 International Conference on Interactive Mobile Communication Technologies and Learning (IMCL)*, (pp. 406-410). Thessaloniki. https://doi.org/10.1109/imctl.2015.7359631

Landers, R. N. (2018). Gamification Misunderstood: How Badly Executed and Rhetorical Gamification Obscures Its Transformative Potential. *Journal of Management Inquiry, XXVIII*(2), 137-140. https://doi.org/10.1177/1056492618790913

Lee, J., & Martin, L. (2017). Investigating Students' Perceptions of Motivating Factors of Online Class Discussions. *International Review of Research in Open and Distributed Learning, XVIII*(5), 148-170. https://doi.org/10.19173/irrodl.v18i5.2883

Lo, C. K., & Hew, K. F. (2018). A Comparison of Flipped Learning with Gamification, Traditional Learning, and Online Independent Study: The Effects on Students' Mathematics Achievement and Cognitive Engagement. *Interactive Learning Environments, XXVIII*(4), 464-481. https://doi.org/10.1080/10494820.2018.1541910

Lowenthal, P. R., & Moore, R. L. (2020). Exploring Student Perceptions of Flipgrid in Online Courses. *Online Learning Journal, XXIV*(4), 28-41. https://doi.org/10.24059/olj.v24i4.2335

Meijs, C., Neroni, J., Gijselaers, H. J., Leontjevas, R., Kirschner, P. A., & de Groot, R. H. (2019). Motivated Strategies for Learning Questionnaire Part B Revisited: New Subscales for an Adult Distance Education Setting. *The Internet and Higher Education, XL*, 1-11. https://doi.org/10.1016/j.iheduc.2018.09.003

Mese, C., & Dursun, O. O. (n.d.). Effectiveness of Gamification Elements in Blended Learning Environments. *Turkish Online Journal of Distance Education, XX*(3), 119-142. https://doi.org/10.17718/tojde.601914

Nieto-Escamez, F. A., & Roldán-Tapia, M. D. (2021). Gamification as Online Teaching Strategy During COVID-19: A Mini-Review. *Frontiers in Psychology, XIII*. https://doi.org/10.3389/fpsyg.2021.648552

Park, S., & Kim, S. (2021). Is Sustainable Online Learning Possible with Gamification?—The Effect of Gamified Online Learning on Student Learning. *Sustainability, XIII*(8), 4267-4290. https://doi.org/10.3390/su13084267

Rahardja, U., Aini, Q., Ariessanti, H. D., & Khoirunisa, A. (2018). Pengaruh Gamifikasi Pada iDu (Ilearning Education) dalam Meningkatkan Motivasi Belajar Mahasiswa (The Effect of Gamification on iDu (E-Learning Education) in Increasing Student Learning

Motivation). *NJCA (Nusantara Journal of Computers and Its Applications), III*(2), 120-124. https://doi.org/10.36564/njca.v3i2.85

Rakasiwi, C. W., & Muhtadi, A. (2021). Developing educational games for mathematics learning to improve learning motivation and outcomes. *Jurnal Teknologi Pendidikan, XXIII*(1), 49-57. http://dx.doi.org/10.21009/JTP2001.6

Schleicher, A. (2020). The impact of covid-19 on education: Insights from education at a glance 2020. In *OECD Journal: Economic Studies* (pp. 1-30). Paris, France: OECD Publishing.

Seaborn, K., & Fels, D. I. (2015). Gamification in Theory and Action: A Survey. *International Journal Human-Computer Studies, LXXIV*, 14-31. https://doi.org/10.1016/j.ijhcs.2014.09.006

Segura-Robles, A., Fuentes-Cabrera, A., Parra-González, M. E., & López-Belmonte, J. (2020). Effects on Personal Factors Through Flipped Learning and Gamification as Combined Methodologies in Secondary Education. *Frontiers in Psychology, XI*, 1-8. https://doi.org/10.3389/fpsyg.2020.01103

Selvi, K. (2010). Motivating Factors in Online Courses. *Procedia Social dan Behavioral Sciences, II*(2), 819-824. https://doi.org/10.1016/j.ijhcs.2014.09.006

Sriratnasari, S. R., Wang, G., & Kaburuan, E. R. (2019). Applying Innovative Learning Management System (LMS) with Gamification Framework. *Applying Innovative Learning Management System (LMS) with Gamification Framework*, (pp. 569-573). https://doi.org/10.1109/isemantic.2019.8884295

Sur, W. A., Hasanah, M., & Mustofa, M. R. (2020). Analisis Motivasi Belajar Mahasiswa dengan Sistem Pembelajaran Daring Selama Masa Pandemi Covid-19 (Analysis of Student Learning Motivation with Online Learning Systems During the Covid-19 Pandemic). *Jurnal Equation: Teori dan Penelitian Pendidikan Matematika, III*(2), 40-54. http://dx.doi.org/10.29300/equation.v3i2.3464

Thiebes, S., Lins, S., & Basten, D. (2014). Gamifying Information Systems: A Synthesis of Gamification Mechanics and Dynamics. *Proceedings of the Twenty Second European Conference on Information Systems*, (pp. 1-17). Retrieved from http://aisel.aisnet.org/ecis2014/proceedings/track01/4/

Zheng, M., & Ferreira, L. (2020). Gamification to Enhance Online Learning and Engagement. *Journal of Dental Education*, 1-4. https://doi.org/10.1002/jdd.12296

jurnal kependidikan

ORIGINALITY REPORT

16%	15%	8%	10%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Universitas Negeri Malang Student Paper	7%
2	www.atlantis-press.com Internet Source	2%
3	teknikkimia.usu.ac.id Internet Source	1%
4	keep.lib.asu.edu Internet Source	1%
5	www.researchgate.net Internet Source	1%
6	education-study.org Internet Source	<1%
7	ejournal.undiksha.ac.id Internet Source	<1%
8	files.eric.ed.gov Internet Source	<1%
9	ifets.info Internet Source	<1%

10	www.coursehero.com Internet Source	<1 %
11	e-journal.undikma.ac.id Internet Source	<1 %
12	Submitted to Universiti Teknologi Mara Student Paper	<1 %
13	www.mysciencework.com Internet Source	<1 %
14	Submitted to Heriot-Watt University Student Paper	<1 %
15	Niko Sudibjo, Ranggi Kanya Prameswari. "The effects of knowledge sharing and person–organization fit on the relationship between transformational leadership on innovative work behavior", Heliyon, 2021 Publication	<1 %
16	Submitted to Universiti Teknologi MARA Student Paper	<1 %
17	Submitted to University of Santo Tomas Student Paper	<1 %
18	www.tandfonline.com Internet Source	<1 %
19	text-id.123dok.com Internet Source	<1 %

20	www.scribd.com Internet Source	<1 %
21	academic-publishing.org Internet Source	<1 %
22	hrmars.com Internet Source	<1 %
23	ijstr.org Internet Source	<1 %
24	v3r.esp.org Internet Source	<1 %
25	www.openaccess.hacettepe.edu.tr:8080 Internet Source	<1 %
26	www.sapili.org Internet Source	<1 %
27	José Figueiredo, Francisco José García-Peñalvo. "Intelligent Tutoring Systems approach to Introductory Programming Courses", Eighth International Conference on Technological Ecosystems for Enhancing Multiculturality, 2020 Publication	<1 %
28	Kurnia Putri Sepdikasari Dirgantoro, Robert Harry Soesanto. "Analysis of Self-Regulated Learning of Students in Mathematics Education Study Program in Number Theory	<1 %

Course", JIPM (Jurnal Ilmiah Pendidikan Matematika), 2021
Publication

29	Nur Rachmat, Bambang Kuncoro. "The Relationship between Online Learning Motivation and Student Learning Achievement in Prosthetic Orthotic Major at Health Polytechnic Surakarta", KnE Social Sciences, 2021 Publication	<1 %
30	ejournal.iainkerinci.ac.id Internet Source	<1 %
31	pdf.eu-jer.com Internet Source	<1 %

Exclude quotes	On	Exclude matches	Off
Exclude bibliography	On		