



Use of Gamification to Increase Motivation in Learning

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ABSTRACT

The industrial revolution 4.0 is driving progress, one of which is in the field of education, where learning methods must be improved along with technological developments. The gamification method as a learning approach uses several elements in the game to motivate students in the learning process. Gamification is one method that is widely used because it is considered to increase motivation and provide attractiveness to students in carrying out the learning process. This study uses a survey method. The study results show that students are motivated when the learning process is done in a gamification way because students like game systems with rankings that have a reward. It should be understood that gamification is not only about a game but also about using game systems in real life. It is necessary to carry out further research on ways to develop gamification to increase students' learning motivation so that this gamification method can be more diverse.

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ABSTRAK

Revolusi industri 4.0 menjadi pendorong kemajuan salah satunya dalam bidang pendidikan yang membuat cara belajar harus ditingkatkan seiring dengan perkembangan teknologi. Metode gamifikasi sebagai pendekatan pembelajaran menggunakan beberapa elemen dalam gim bertujuan untuk memotivasi peserta didik dalam proses pembelajaran. Gamifikasi menjadi salah satu metode yang banyak digunakan karena dianggap dapat meningkatkan motivasi dan memberikan daya tarik kepada peserta didik dalam melaksanakan proses pembelajaran. Penelitian ini menggunakan metode survey. Hasil penelitian menunjukkan peserta didik termotivasi apabila proses pembelajaran dilakukan dengan cara gamifikasi karena peserta didik menyukai sistem gim dengan pemeringkatan yang memiliki sebuah reward. Perlu dipahami bahwa gamifikasi tidak hanya tentang sebuah gim namun, menggunakan sistem gim dalam kehidupan nyata. Perlu diadakan penelitian lebih lanjut mengenai cara-cara mengembangkan gamifikasi untuk meningkatkan motivasi belajar peserta didik agar metode gamifikasi ini dapat semakin beragam.

Kata Kunci: Gamifikasi; inovasi pembelajaran; motivasi belajar

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INTRODUCTION

In reaching knowledge, the spirit of learning is the primary driver that will guide us through every page of the book toward a broader horizon of knowledge. Motivation in learning is not only energy that moves students to learn but also directs students' activities toward learning goals (Endrejat et al., 2017; Hojnik & Ruzzier, 2016; Saeid & Eslaminejad, 2017). This means that no matter how good the potential of students, which includes the intellectual abilities or talents of students, the material to be taught, and the complete learning facilities, students need to be motivated to learn, and the learning process will not take place optimally.

The definition of motivation discussed by experts includes a discussion of stimuli, habits, and feelings of curiosity within students. Most experts divide motivation into two types: intrinsic motivation and extrinsic motivation. Intrinsic motivation is the desire to act due to motivating factors from within the individual (Borah, 2021; Ng, 2018; Sharma & Sharma, 2018). However, learning activities often take place when they are based on something other than intrinsic motivation. The lack of intrinsic motivation can also be caused by learners' intellectual, emotional, and social immaturity.

Extrinsic motivation is motivation that exists due to the influence of external stimuli. Extrinsic motivation includes the primary purpose of individuals doing activities to achieve goals outside the learning activity, or the goal is not involved in learning activities (Cook & Artino Jr, 2016; Locke & Schattke, 2019). Intrinsic and extrinsic motivation are mutually reinforcing; even extrinsic motivation can generate intrinsic motivation.

In the study of learning theory, the diversity of understanding learning is categorized into three theories: behavioristic learning theory, cognitivism learning theory, and constructivist learning theory. According to behavioristic theory, learning is a process of adaptation or behavioral adjustment that occurs progressively (Bormanaki & Khoshhal, 2017; Budiman, 2017; Koechlin, 2016). The onset of behavior is due to the relationship between stimulus and response, where a particular stimulus will cause a specific response from the individual. The response to this stimulus is referred to as learning. Meanwhile, in the view of cognitivism, learning is seen as an active process of individuals processing information (Basri, 2018). Furthermore, constructivism views learning as an active process of learners constructing knowledge through selecting, organizing, and integrating information (Olofson et al., 2016; Voon et al., 2020).

Several notions of learning lead to one essence of learning: cognitive processes supported by psychomotor functions (Hoque, 2016; Sönmez, 2017; Sottolare et al., 2017). In this case, psychomotor functions include Hearing, seeing, and speaking. The manifestation of learning by students almost always involves the function of the realm of reason, whose intensity of use is undoubtedly different from other learning events.

In the learning process, a stimulus is needed to increase learning motivation. One of them is the gamification method. Gamification is described as a learning approach using some game elements to motivate learners in the learning process. Gamification is a widely used method because it increases motivation and provides attractiveness for students in the learning process.

In an educational context, gamification improves learner engagement, motivation, and learning outcomes. Gamification elements such as rewards can provide positive reinforcement for learners' learning efforts, while competition can stimulate enthusiasm to participate and achieve better (Bai et al., 2020; Chans & Castro, 2021; Zainuddin & Keumala, 2021). By incorporating these elements into the learning experience, educational institutions seek to create a more engaging and interactive environment.

Seeing the potential of the gamification method to increase learning motivation for students, this method can be applied to the learning process in the classroom. For this reason, researchers tried to examine the gamification method in this study. This study aims to determine the effect of gamification on increasing student motivation, so it is hoped that this gamification method can be applied optimally and increase student motivation.

LITERATURE REVIEW

Gamification

Gamification is an approach that is gaining popularity in education and other fields. It involves using elements commonly associated with games in a non-game context, intending to motivate and engage individuals in an activity. These elements can include rewards, levels, competitions, challenging tasks, and more.

While gamification has excellent potential to improve engagement and learning outcomes, it is essential to consider the broader goals of education. Gamification should focus on extrinsic rewards and consider developing learners' intrinsic motivation, which comes from within themselves (Mekler et al., 2017; Razali et al., 2020; Van Roy & Zaman, 2017). This approach can effectively achieve learning objectives by designing gamification elements that fulfill both psychological and educational aspects.

Overall, gamification is a promising approach to motivating and engaging individuals in various activities, including learning. By utilizing elements from the world of games, education can become more attractive, interactive, and effective in achieving learning objectives. However, wise implementation tailored to the context and goals of education is crucial in making gamification an effective tool.

Social Cognitive

Social Cognitive is a psychological framework that considers the interaction between cognitive factors (thoughts and understanding) and social factors in shaping behavior and learning. Essentially, this theory emphasizes how individuals learn through observation, interaction with the environment, and interaction with others. Social Cognitive Theory states that humans learn through the direct consequences of their actions and observation and modeling of others (Lent et al., 2016; Lim et al., 2020; Schunk & DiBenedetto, 2020).

One core concept in Social Cognitive Theory is self-efficacy. This refers to an individual's belief in his or her ability to succeed in a given situation. A person's level of self-efficacy influences their motivation and effort to take on tasks and challenges. Individuals with high

levels of self-efficacy are more likely to overcome obstacles and work hard to achieve their goals (Mirsanti, 2019; Permana et al., 2016; Sintya, 2019).

Social Cognitive Theory also recognizes the role of feedback in learning. Positive feedback that provides reinforcement and recognition can increase learners' motivation and confidence. Conversely, negative feedback can affect self-efficacy and lead to decreased motivation. Therefore, in using gamification to increase motivation in learning, it is essential to provide constructive and supportive feedback (Sailer & Sailer, 2021; Van Roy & Zaman, 2017). Within Social Cognitive Theory, social interaction also plays a significant role in learning. Group discussions, cooperation, and shared experiences can help learners build more profound understanding and broaden their perspectives. Environments encouraging positive interactions and collaboration can enhance learning through modeling, discussion, and social reinforcement.

Social Cognitive Theory underlines that learning results from a complex interaction between cognitive, social, and environmental factors. Self-efficacy, behavioral modeling, feedback, and social interaction are vital components that must be considered in designing effective and motivating learning strategies.

Reinforcement Theory

Reinforcement Theory, also known as "Reinforcement Theory," is one of the main approaches in psychology that examines how rewards or reinforcement affect human behavior. This theory explains that behavior tends to be repeated if it is followed by reinforcement that is considered positive (Lefebvre et al., 2017). According to McLean & Christensen (2017), this reinforcement can be a reward, praise, recognition, or even the avoidance of negative consequences. The principles of this theory provide essential insights into how humans learn, adapt, and develop new behaviors.

Conversely, the theory also recognizes negative reinforcement, which involves removing or avoiding an unwanted stimulus after a specific behavior. An example would be allowing learners to leave class a few minutes early if they have completed their work well. Negative reinforcement can motivate learners to achieve goals to avoid unwanted consequences.

It is essential to understand that the effectiveness of reinforcement depends on timeframe and consistency. Reinforcement delivered consistently after the desired behavior will likely be more successful in shaping and maintaining the desired behavior (Wood & Neal, 2016). Uncertainty in the delivery of reinforcement can reduce its effectiveness and produce inconsistent results.

In the context of education, Reinforcement theory has significant implications. Positive reinforcement through awards, points, or praise can stimulate learners' learning motivation (Sidin, 2021). Applying these principles in education often involves publicly recognizing learners' achievements, providing small rewards for completed tasks, or creating an environment where success is valued and recognized.

Overall, Reinforcement Theory is an essential concept in psychology and education that underscores how rewards or reinforcement can influence learning and behavior. In an education world, increasingly using technology and innovative approaches such as

gamification, understanding the principles of this theory can help design more effective and motivating learning experiences.

METHODS

In this research, the method applied is a survey. The survey method is used to collect data on respondents' perceptions and preferences regarding the implementation of gamification in the learning environment (Santos et al., 2021). This method explores respondents' responses, motivations, and interests related to gamification in the learning context. The survey was conducted through the Google Form platform, and the distribution was done online through various communication channels to the respondents. With this approach, the research seeks to collect representative and in-depth data on how gamification affects their perception and engagement in learning.

RESULT AND DISCUSSION

Research on 40 people who have done the learning process with gamification was conducted by giving a questionnaire containing five questions about learning motivation after doing the learning process. Then, the data obtained from the research was in the form of bar charts. Then, this data is processed, and the difference value of each question is obtained. The research description is developed based on the questions in the questionnaire.

First Questionnaire Questions

The first question of the questionnaire was, "Do you like playing games?". This question was asked to determine how much the learners like playing games. After the research, data was obtained on how much students like to play games. The processed research results can be seen in **Figure 1**:

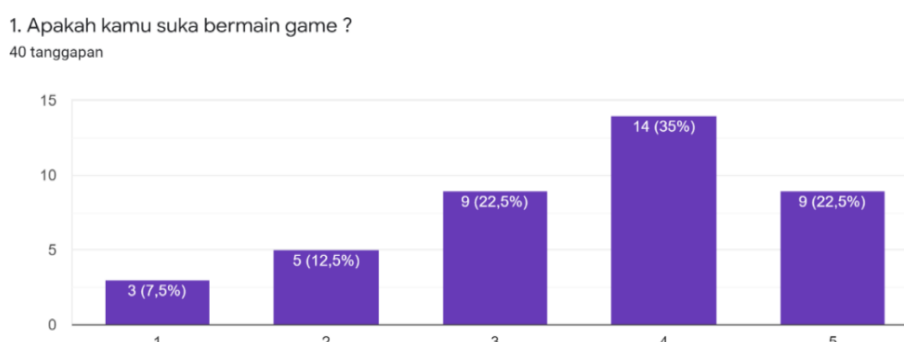


Figure 1. Diagram of the percentage of learners' liking to play games
Source: Research 2021

Based on the figure, it can be seen that many of the learners like playing games. In the first choice (1), learners who dislike playing games, namely three learners (7.5%). In the second choice (2), learners who do not like playing games, namely 5 learners (12.5%). In the third choice (3), learners who do not like playing games, namely nine learners (22.5%). In the fourth choice (4), learners who like to play games, namely 14 learners

(35%). In the fifth choice (5), learners who like playing games, namely nine learners (22.5%). In this picture, it can be seen that many learners like to play games.

Judging from these results, the opportunity to use the gamification method in the learning process is quite significant. This is in line with the results of other studies, which state that gamification can provide positive reinforcement for learning efforts made by students so that they are expected to achieve better achievement (Bai et al., 2020; Chans & Castro, 2021; Zainuddin & Keumala, 2021).

Second Questionnaire Questions

The second questionnaire question was, "If learning is done as a quiz, how much do you prepare for learning?". This question was asked to determine how much preparation the learners had for the quiz. After the research, data was obtained on how much students were prepared to face the quiz. The processed results can be seen in **Figure 2**:

2. Apabila pembelajaran dilakukan dalam bentuk kuis, seberapa besar persiapanmu dalam belajar ?
40 tanggapan

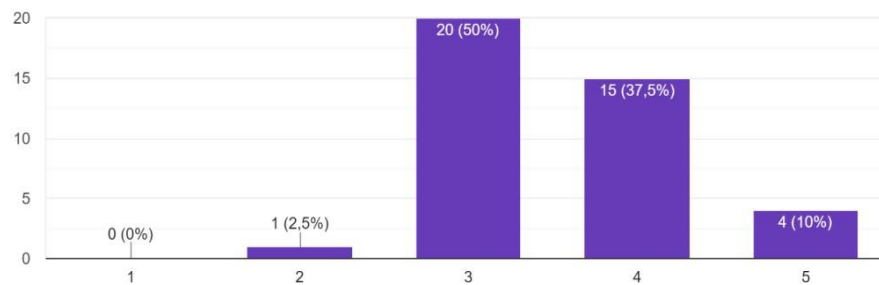


Figure 2. Diagram of the percentage of students' learning preparation
Source: Research 2021

Based on the figure, it can be seen that learners continue to study as usual for the quiz, although some learners are very prepared for learning, and there are no learners who are very unprepared for the quiz. In the first option (1), no learners were unprepared to study for the quiz (0%). In the second option (2), one learner was not ready to learn for the quiz (2.5%). In the third option (3), learners who study as usual for the quiz are 20 learners (50%). In the fourth option (4), learners who are ready to learn for the quiz are 15 learners (37.5%). In the fifth option (5), four learners were ready to study for the quiz (10%). In this diagram, it can be seen that learners will continue to study as usual for the quiz.

Their self-efficacy greatly influences learners' readiness for quizzes. With gamification, learners' motivation is increased mainly due to the gamification system, which provides rewards and other game elements. Learners with high self-efficacy can be more motivated to complete the games in this gamification method. This is in line with other studies that discuss a person's belief in their ability to face specific challenges and situations (Mirsanti, 2019; Permana et al., 2016; Sintya, 2019).

Third Questionnaire Questions

The third questionnaire question was, "How interesting is a quiz if there is a ranking of scores?". This question was asked to find out how much learners are interested if there is a ranking in the quiz. After the research, data was obtained regarding learners' interest in ranking scores in the quiz. The results obtained can be seen in **Figure 3**:



Figure 3. Diagram of how interesting the quiz is with score ranking
Source: Research 2021

Based on the figure, learners feel interested in the ranking in the quiz. In the first option (1) learners who felt uninterested in the ranking were none (0%). In the second option (2), learners who felt uninterested in the ranking, namely two learners (5%). In the third option (3), learners who felt less interested in the ranking, namely eight learners (20%). In the fourth option (4), 17 learners (42.5%) were interested in the ranking. In the fifth option (5), learners who felt very interested in the ranking were 13 learners (32.5%). In this diagram, learners will likely feel interested in the existence of rankings in quizzes, as well as elements in games (Zainuddin & Keumala, 2021).

Fourth Questionnaire Questions

The fourth questionnaire question was, "Do you agree that the quiz winner gets a reward?". This question was asked to find out whether students' motivation would increase if the quiz winners were given treatment in the form of a reward. After the research, the data obtained can be seen in **Figure 4**.



Figure 4. Diagram of learners' interest in quiz rewards
Source: Research 2021

Based on the figure, it can be seen that learners are interested in the reward for the winner or the person who has the highest score. In the first option (1), learners strongly disagree with the existence of rewards for quiz winners, namely none (0%). In the second option

(2), learners disagreed with the existence of rewards for quiz winners, namely two learners (5%). In the third option (3), students who felt normal with the reward for quiz winners, namely five students (12.5%). In the fourth option (4), learners agreed that there were rewards for quiz winners, namely 11 learners (27.5%). In the fifth option (5), learners strongly agree that there are rewards for quiz winners, namely 22 learners (55%). In this diagram, it can be seen that students are highly motivated by rewards for winners, which will increase the sense of competition in students (Chans & Castro, 2021).

Fifth Questionnaire Questions Soal

The fifth questionnaire was "Would your learning motivation increase if learning was done with games like Kahoot?". This question was asked to determine how much motivation students have with this gamification-based learning process. After the research, the processed data has been presented in the form of Figure 5:



Figure 5. Diagram of how interesting the quiz model learning is
Source: Research 2021

Based on this figure, learners feel very motivated by gamification. In the first choice (1) learners who feel unmotivated by gamification, namely one learner (2.5%). In the second choice (2), 16 learners (40%) feel motivated by gamification. In the third option (3), 23 learners (53.5%) felt highly motivated by gamification. In this figure, students will feel very motivated if the learning process is carried out by gamification. From this data, the gamification-based learning process can increase students' motivation. Motivation is one of the most important dynamic aspects of the learning process.

A motive is a set that can make individuals perform certain activities to achieve goals. Thus, motivation is a drive that can lead to specific behaviors toward achieving a particular goal (Sidin, 2021). Utilizing learners' interest in games, gamification elements are designed exactly like the developing games and linked to real life in the form of rewards, it is hoped that gamification will increase students' learning motivation.

CONCLUSION

Based on the data analysis described above, most students like games. Learners' interest in games can be utilized to use gamification methods in the classroom learning process. The gamification method, which can be linked to real life in the form of ranking and rewards that also exist in-game elements, motivates students to implement the learning process. Thus, this gamification method can be an alternative for teachers to increase

learner participation and motivation. It is hoped that in the future, there can also be a way to develop this gamification so that the gamification method is more diverse.

AUTHOR'S NOTE

The authors declare that there is no conflict of interest related to the publication of this article. The authors emphasize that the data and content of the article are free from plagiarism.

REFERENCES

- Bai, S., Hew, K. F., & Huang, B. (2020). Does gamification improve student learning outcome? evidence from a meta-analysis and synthesis of qualitative data in educational contexts. *Educational Research Review, 30*, 100322.
- Basri, H. (2018). Kemampuan kognitif dalam meningkatkan efektivitas pembelajaran ilmu sosial bagi siswa sekolah dasar. *Jurnal Penelitian Pendidikan, 18*(1), 1–9.
- Borah, M. (2021). Motivation in learning. *Journal of Critical Reviews, 8*(2), 550–552.
- Bormanaki, H. B., & Khoshhal, Y. (2017). The role of equilibration in Piaget's theory of cognitive development and its implication for receptive skills: a theoretical study. *Journal of Language Teaching & Research, 8*(5), 996-1005.
- Budiman, A. (2017). Behaviorism and foreign language teaching methodology. *English Franca: Academic Journal of English Language and Education, 1*(2), 101–114.
- Chans, G. M., & Castro, M. P. (2021). Gamification as a strategy to increase motivation and engagement in higher education chemistry students. *Computers, 10*(10), 1-24.
- Cook, D. A., & Artino Jr, A. R. (2016). Motivation to learn: an overview of contemporary theories. *Medical Education, 50*(10), 997–1014.
- Endrejat, P. C., Baumgarten, F., & Kauffeld, S. (2017). When theory meets practice: combining Lewin's ideas about change with motivational interviewing to increase energy-saving behaviours within organizations. *Journal of Change Management, 17*(2), 101–120.
- Hojnik, J., & Ruzzier, M. (2016). The driving forces of process eco-innovation and its impact on performance: insights from Slovenia. *Journal of Cleaner Production, 133*, 812–825.
- Hoque, M. E. (2016). Three domains of learning: cognitive, affective and psychomotor. *The Journal of EFL Education and Research, 2*(2), 45–52.
- Koechlin, E. (2016). Prefrontal executive function and adaptive behavior in complex environments. *Current Opinion in Neurobiology, 37*, 1–6.
- Lefebvre, G., Lebreton, M., Meyniel, F., Bourgeois-Gironde, S., & Palminteri, S. (2017). Behavioural and neural characterization of optimistic reinforcement learning. *Nature Human Behaviour, 1*(4), 0067.
- Lent, R. W., Ezeofor, I., Morrison, M. A., Penn, L. T., & Ireland, G. W. (2016). Applying the social cognitive model of career self-management to career exploration and decision-making. *Journal of Vocational Behavior, 93*, 47–57.
- Lim, J. S., Choe, M.-J., Zhang, J., & Noh, G.-Y. (2020). The role of wishful identification, emotional engagement, and parasocial relationships in repeated viewing of live-streaming games: a social cognitive theory perspective. *Computers in Human Behavior, 108*, 106327.
- Locke, E. A., & Schattke, K. (2019). Intrinsic and extrinsic motivation: time for expansion and clarification. *Motivation Science, 5*(4), 277-290.
- McLean, A. N., & Christensen, J. W. (2017). The application of learning theory in horse training. *Applied Animal Behaviour Science, 190*, 18–27.

- Mekler, E. D., Brühlmann, F., Tuch, A. N., & Opwis, K. (2017). Towards understanding the effects of individual gamification elements on intrinsic motivation and performance. *Computers in Human Behavior, 71*, 525–534.
- Mirsanti, N. (2019). Konsep tafakur untuk penguatan efikasi diri pada pribadi introvert. *Sangkép: Jurnal Kajian Sosial Keagamaan, 2(2)*, 171–184.
- Ng, B. (2018). The neuroscience of growth mindset and intrinsic motivation. *Brain Sciences, 8(2)*, 1–10.
- Olofson, M. W., Swallow, M. J., & Neumann, M. D. (2016). TPACKing: a constructivist framing of TPACK to analyze teachers' construction of knowledge. *Computers & Education, 95*, 188–201.
- Permana, H., Harahap, F., & Astuti, B. (2016). Hubungan antara efikasi diri dengan kecemasan dalam menghadapi ujian pada siswa kelas IX di MTs Al Hikmah Brebes. *Jurnal Hisbah, 13(1)*, 51–68.
- Razali, N., Nasir, N. A., Ismail, M. E., Sari, N. M., & Salleh, K. M. (2020). Gamification elements in Quizizz applications: evaluating the impact on intrinsic and extrinsic student's motivation. *IOP Conference Series: Materials Science and Engineering, 917(1)*, 012024.
- Saeid, N., & Eslaminejad, T. (2017). Relationship between student's self-directed-learning readiness and academic self-efficacy and achievement motivation in students. *International Education Studies, 10(1)*, 225–232.
- Sailer, M., & Sailer, M. (2021). Gamification of in-class activities in flipped classroom lectures. *British Journal of Educational Technology, 52(1)*, 75–90.
- Santos, A. C. G., Oliveira, W., Hamari, J., Rodrigues, L., Toda, A. M., Palomino, P. T., & Isotani, S. (2021). The relationship between user types and gamification designs. *User Modeling and User-Adapted Interaction, 31(5)*, 907–940.
- Schunk, D. H., & DiBenedetto, M. K. (2020). Motivation and social cognitive theory. *Contemporary Educational Psychology, 60*, 101832.
- Sharma, D., & Sharma, S. (2018). Relationship between motivation and academic achievement. *International Journal of Advances in Scientific Research, 4(1)*, 1–5.
- Sidin, S. A. (2021). The application of reward and punishment in teaching adolescents. *Ninth International Conference on Language and Arts (ICLA 2020)*, 251–255.
- Sintya, N. M. (2019). Pengaruh motivasi, efikasi diri, ekspektasi pendapatan, lingkungan keluarga, dan pendidikan kewirausahaan terhadap minat berwirausaha mahasiswa jurusan Akuntansi di Universitas Mahasaraswati Denpasar. *JSAM (Jurnal Sains, Akuntansi dan Manajemen), 1(1)*, 337–380.
- Sönmez, V. (2017). Association of cognitive, affective, psychomotor and intuitive domains in education, Sönmez model. *Universal Journal of Educational Research, 5(3)*, 347–356.
- Sottolare, R., Hackett, M., Pike, W., & LaViola, J. (2017). Adaptive instruction for medical training in the psychomotor domain. *The Journal of Defense Modeling and Simulation, 14(4)*, 331–343.
- Van Roy, R., & Zaman, B. (2017). Why gamification fails in education and how to make it successful: introducing nine gamification heuristics based on self-determination theory. *Serious Games and Edutainment Applications, 2*, 485–509.
- Voon, X. P., Wong, L. H., Looi, C. K., & Chen, W. (2020). Constructivism-informed variation theory lesson designs in enriching and elevating science learning: Case studies of seamless learning design. *Journal of Research in Science Teaching, 57(10)*, 1531–1553.
- Wood, W., & Neal, D. T. (2016). Healthy through habit: interventions for initiating & maintaining health behavior change. *Behavioral Science & Policy, 2(1)*, 71–83.
- Zainuddin, Z., & Keumala, C. M. (2021). Gamification concept without digital platforms: a strategy for parents on motivating children study at home during COVID-19 pandemic. *Pedagogik: Jurnal Pendidikan, 8(1)*, 156–193.