Implementation of Gamification on Learning Motivation: A Meta-Analysis Study

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Abstract – This research aims to determine the impact of gamified learning on learning motivation. The research method used in this study is meta-analysis, which involves reviewing and analyzing 8 scientific articles downloaded from the Google Scholar platform. Data were obtained by searching online journal articles using keywords such as gamification and learning motivation. From the conducted search, 19 articles were found, but only 8 of them were relevant for use in the study. Based on the analysis, the use of gamification in education has been proven to increase students' learning motivation, with the lowest increase recorded at 8.33% and the highest at 89.33%. Gamification has a significant influence on students' learning motivation. The concept of gamification can be implemented in educational activities in line with technological advancements. Additionally, game characteristics, such as the presence of challenges, can make learning more engaging and enjoyable.

Keywords – Learning; Gamification; Learning Motivation.

I. INTRODUCTION

The current learning activities conducted in several educational institutions still employ conventional methods, where the teaching and learning processes are limited to using paper and books as tools by educators, engaging in direct classroom discussions, collecting and distributing assignments, which are repeated in every learning session. Such practices can become monotonous in the digital and disruptive era of today, leading students to feel unmotivated and unable to explore the learning process.[1].

In learning, there is a need for designs that can provide motivation, enjoyment, and other interesting elements to make students relish the learning process and cultivate motivation to learn. Learning that incorporates elements from games or gamification should be considered as a reference in designing effective teaching methods.

Gamification is frequently utilized in 21st-century learning. It applies innovative culture in education, making the learning process more interactive and enhancing the quality of education [2]. The fun factor offered by games is a reason why learning through games is popular among students [3]. Three psychological benefits obtained from games – cognitive, emotional, and social – can enhance motivation to engage in learning through games [4].

Learning motivation is a crucial factor in the learning process[5]. Learning motivation is essential for the learning process and plays a significant role in providing enthusiasm and passion for learning [6]. Learning motivation is not only a supportive factor for achieving good outcomes but also involves effort to reach learning goals [7]. The significance of students'

motivation in learning demands that teachers play a role in designing learning experiences that foster student motivation, creating enjoyable and engaging learning environments [7].

Gamification can render learning more dynamic, potentially resulting in higher motivation levels [8]. Gamification uses gaming elements within traditional classroom teaching to motivate students and reshape the learning process.

Learning is deemed effective when students understand the learning content, experience increased motivation and interest, and achieve learning outcomes. This study aims to analyze to what extent gamification implementation can enhance learning motivation.

II. METHOD

This study is a descriptive research conducted using the meta-analysis method. Data was collected through Google Scholar using keywords such as gamification, learning motivation, and meta-analysis. The processed articles were sourced from national journals published within the last 5 years.

Based on the search on Google Scholar, 19 articles were found that were relevant to the research title, and 8 relevant articles were selected. The examined articles by the author are the outcomes of both quantitative experimental and action research, thereby containing data of values before and after the intervention. The author conducted an analysis using a comparative approach to determine the impact of gamification based on the difference in learning motivation scores of students before and after the intervention.

III. RESULTS AND DISCUSSION

This meta-analysis study aims to examine the impact of gamification implementation on students' learning motivation. The research compares 8 qualified articles. The results of the comparison of the articles used as the research sample are presented in the following Table 1:

Table 1. Improvement in Learning Motivation

	Research Topic	Authors	Improvement in Learning Motivation			
			Before	**After**	**Gain**	**Gain (%)**
1	Implementation of Gamification Assisted by Kahoot Media to Enhance Learning Activity, Learning Motivation, and Learning Outcomes: A Journal Adjustment Study on 10th Grade Accounting Students in SMK Koperasi Yogyakarta, Academic Year 2018/2019.	Serly Wardana, Endra Murti Sagoro	61.63	69.7	8.07	13.09
2	Application of Gamification in Learning Assisted by Powtoon Application on Adjusting Journal Material to Enhance Learning Motivation of 10th Grade Accounting Students at SMKN 1 Tempel, Academic Year 2017/2018	Intan Primaniar Mumpuni, Endra Murti Sagoro	76.2	82.55	6.35	8.33
3	Implementation of Gamification-Based Assessment Media on Learning Motivation in Biology for MAN Kotawaringin Timur Students	Noor Eka Febryana, Zubaidah Zubaidah	55	74.32	19.32	35.13

No	Title	Author				
4	Application of Gamification Using Wordwall Application to Enhance Learning Motivation of 10th Grade Motorcycle Business Program Students at SMKN 1 Purwasari	Miya Nurmelati	60	70.15	10.15	16.92
5	Use of Gamification-Based Educandy Learning Media to Improve Learning Outcomes and Learning Motivation for Grade III PPKN (Civic Education) Students	Slamet Aji Wibowo	48.38	91.6	43.22	89.33
6	Application of Gamification Method in Enhancing Student Learning Motivation in Analytic Geometry Field Through Kahoot Application	RY Tyaningsih, L Hayati, Ketut Sarjana, Nyoman Sridana, S. Prayitno	70.02	85.33	15.31	21.87
7	Optimizing Business Economics Learning Based on Gamification to Enhance Student Motivation	Erdyna Etika, Umi Hidayati, Dimas Geopratama Ramadhan	42.7	70.4	27.7	64.87
8	Effectiveness of Sliding Puzzle Gamification in E-Learning for Improving Motivation and Science Learning Outcomes.	Riana Susanti	70.3	98.4	28.1	39.97
	Average		60.53	80.31	19.78	36.19

From the 8 sampled articles, it is evident that gamification has an influence on students' learning motivation. Based on the data presented in Table 1, which covers various educational levels including primary education, secondary school, and higher education, the use of gamification models is capable of enhancing students' learning motivation. The increase ranges from the lowest at 8.33% to the highest at 89.33%..

According to the data analysis results in Table 1, the average score before intervention is 60.53, while the average score after intervention is 80.31. The difference between the average scores before and after the intervention is 19.78%. The average gain% from the data in Table 1 is 36.19%. It can be deduced from the data in Table 1 that the gamification model is capable of providing an effective solution for educators to enhance student motivation..

Gamification is a process that employs game thinking and mechanics to engage users and solve problems [9]. Further elaborated by Deterding et al. (2011) gamification, which is the use of game design elements in non-game contexts, is a relatively new and rapidly developing field. The concept of gamification differs from educational games or serious games, as "gamified" applications only utilize game elements..

Similar to games, players are allowed to replay or restart, rectifying mistakes and thereby reducing the fear of failure and increasing their interest in the game. Games make technology more interactive [11].

Gamification often emphasizes that the strategic and appropriate use of game elements can result in a learning environment characterized by active engagement and high motivation, ultimately leading to positive outcomes in cognitive, emotional, and social domains [12]. The hypothesized motivational power has made gamification a highly promising model in the realm of education [13].

The use of gamification in education can enhance student learning motivation [14]. Gamification leverages gaming elements in an educational context to boost student participation and engagement (Rincon-Flores & Santos-Guevara, 2021; Handayani et al., 2021). Studies have found that gamification can enhance both motivation and learning outcomes for students (Yildiz et al., 2021; Tang & Zhang, 2019). Implementing gamification models makes students more enthusiastic and motivated to complete tasks [1].

Using gamification to support motivation and interest is a crucial development in education. Learning motivation involves the psychological drive within students that prompts learning activities, sustains learning, and directs learning towards achieving specific goals [19]. Learning motivation is a supporting factor in the learning process (Malone & Lepper, 2021; Afsar & Umrani, 2020).

Based on the categorization of educational levels, the implementation of gamified education media like Educandy proves to be most effective in primary school settings, exhibiting the highest gain percentage (Wibowo, 2021). The research results indicate an improvement in learning outcomes and motivation for students, evident from the increasing percentage in each cycle..

A student's motivation is high when they are enthusiastic about the presented material and act in accordance with it [23]. High learning motivation correlates with enhanced learning outcomes (Andriani & Rasto, 2019; Tampubolon et al., 2021; Rahman, 2022). Appropriate learning motivation can drive students to actively achieve success in the classroom [25].

IV. CONCLUSION

This meta-analysis study concludes that the implementation of gamification in education affects students' learning motivation. The analyzed articles encompassed various educational levels, from primary education to higher education. There is an observable improvement in students' learning motivation, ranging from the lowest to the highest, and an increase in average scores before and after interventions. The findings presented in this study can serve as a consideration for future research or educational practices related to gamification and learning motivation, aiming to create effective learning experiences..

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