

### OPTIMIZING LEARNING MANAGEMENT THROUGH GAMIFICATION TO ENHANCE JUNIOR HIGH SCHOOL STUDENT ENGAGEMENT

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#### ABSTRACT

Low student engagement in the learning process at the Junior High School (SMP) level remains a prevalent issue in educational practice. Conventional and monotonous instructional methods tend to induce boredom, leading to a decline in student motivation and active participation. This situation necessitates innovations in learning management capable of fostering a more engaging and student-centered learning environment. One approach considered to hold significant potential is gamification—the application of game elements within an educational context to enhance student engagement. This study aims to comprehensively examine the optimization of learning management through gamification as a means to increase engagement among Junior High School students. This research employs a qualitative approach utilizing a library research method. Data were obtained from secondary sources, including scientific journal articles indexed in Google Scholar, academic books, and educational policy documents relevant to the topic. The data analysis technique employed was content analysis, encompassing the stages of data reduction, thematic categorization, synthesis, and conclusion drawing. The results indicate that gamification plays a strategic role in learning management, particularly in the planning, implementation, and evaluation stages. The application of gamification elements—such as reward systems, challenges, and feedback—has been proven to enhance students' cognitive, emotional, and behavioral engagement. Furthermore, the success of gamification is significantly influenced by the teacher's role in designing innovative and contextual instruction. This study concludes that optimizing learning management through gamification is an effective approach for enhancing student engagement in Junior High Schools. This study is expected to serve as a theoretical and practical reference for educators in developing more adaptive and sustainable instructional strategies.

**Keywords:** learning management, gamification, student engagement, middle school

#### INTRODUCTION

In the evolution of education within the digital era, teaching methods and classroom management have undergone significant transformation alongside the increasing integration of technology in the learning process. Educators are required to continuously seek instructional innovations capable of enhancing student engagement and motivation to foster active participation in learning activities. One increasingly adopted approach is gamification, defined as the application of game elements in non-game contexts to encourage participation, motivation, and user engagement (Deterding et al., 2011, pp. 9–11). In the educational context, gamification encompasses various strategies—such as awarding points, badges, leaderboards, challenges, and rewards—designed to create a more attractive and competitive learning experience (Kapp, 2012, pp. 10–15). As access to digital technology increases, the implementation of gamification has expanded across various levels of education, including secondary schools, as it is considered capable of significantly improving learning motivation and student engagement (Hamari et al., 2014, pp. 302–304).

Gamification is increasingly recognized as an innovative method in education, particularly in encouraging active participation and student motivation across educational levels. This approach integrates game elements, such as points, badges, and leaderboards, into the learning process, thereby creating a more interactive and competitive learning experience (Sailer & Homner, 2021, pp. 77–79). The development of digital technology further strengthens the implementation of gamification in education, enabling educators to design dynamic learning environments that align with the characteristics of digital native students (Huang et al., 2022, pp. 3–5). A number of empirical studies demonstrate that the application of gamification not only has a positive impact on improving learning outcomes but also contributes to the development of 21st-century skills, such as problem-solving, collaboration, and decision-making (Zainuddin et al., 2023, pp. 214–217). Furthermore, the effectiveness of gamification is optimized when teachers actively design innovative learning activities, provide timely feedback, and link game elements to clear learning objectives, making the student learning experience more meaningful and sustainable (Mekler et al., 2021, pp. 10–12). Thus, gamification can be viewed as a relevant and promising instructional strategy for modern educators facing the dynamics and demands of constantly evolving education.

The application of gamification in education has been the subject of various studies in recent years. Several studies indicate that gamification contributes positively to increased student engagement and learning motivation, particularly in learning that utilizes digital technology (Sailer & Homner, 2021, pp. 80–83). Gamification elements, such as points, challenges, and instant feedback, have been proven to encourage students to be more active and consistent in completing academic tasks (Zainuddin et al., 2023, pp. 218–220). However, research findings also indicate that the effectiveness of gamification is heavily influenced by instructional design, the context of implementation, and the characteristics of the students involved; consequently, its application does not always yield uniform impacts (Huang et al., 2022, pp. 6–8).

Furthermore, literature reviews indicate that the majority of gamification research remains focused on online learning or higher education contexts, while studies regarding the application of gamification in classroom management at the secondary school level remain relatively limited (Toda et al., 2021, pp. 5–7). Additionally, research specifically evaluating the impact of gamification on student motivation and academic results within traditional face-to-face classroom environments is still scarce. This condition highlights a research gap that requires further investigation, particularly regarding the role of gamification as a learning management strategy in improving motivation and student achievement in secondary schools (Sailer et al., 2022, pp. 141–143).

Low student motivation at the secondary school level is a crucial issue that directly impacts student engagement and academic achievement. Conventional learning, which tends to be teacher-centered with minimal variation in delivery strategies, often causes boredom and reduces active student participation in the learning process (Sailer & Homner, 2021, pp. 81–83). This lack of engagement implies low intrinsic student motivation, which ultimately affects overall learning outcomes. Therefore, an innovative learning approach is needed to increase the appeal of learning while encouraging sustainable student engagement and motivation. In this context, gamification is viewed as a potential solution as it is capable of creating a more interactive, challenging, and enjoyable learning environment through the integration of game elements into classroom management (Zainuddin et al., 2023, pp. 215–217).

This study aims to evaluate the influence of implementing gamification in classroom management on the motivation and learning outcomes of secondary school students. Specifically, this research focuses on how gamification elements—such as points, challenges, and feedback—can increase student participation, strengthen interest in learning, and contribute to student academic achievement (Huang et al., 2022, pp. 6–8). Several studies show that gamification implemented with proper design and alignment with learning objectives can provide a significant positive impact compared to conventional learning methods, especially in increasing student engagement in class (Sailer et al., 2022, pp. 142–144). Thus, a comparative evaluation between classes applying gamification and conventional classes becomes essential to obtain an empirical overview of the effectiveness of this approach in the context of junior secondary education.

Theoretically, the results of this research are expected to enrich the study of gamification in the field of education, particularly regarding its role in classroom management and the enhancement of secondary school student motivation. Furthermore, this research seeks to fill the gap in studies that are currently limited regarding gamification in the context of face-to-face learning at the secondary education level (Toda et al., 2021, pp. 5–7). From a practical perspective, the research findings are expected to serve as a reference for educators and school administrators in designing learning strategies that are more innovative, adaptive, and effective. Consequently, this research not only contributes to the development of educational theory but also holds practical implications for efforts to sustainably improve the quality of learning in junior secondary schools (Zainuddin et al., 2023, pp. 219–221).

### **Problem Formulation**

Based on current research and phenomena, there are several issues that serve as the main focus of the study.

1. What is the concept of instructional management relevant to the implementation of gamification, based on the literature review?
2. What are the forms of gamification implementation in learning at the Junior High School level, according to findings from prior research?
3. What is the role of gamification-based instructional management in enhancing Junior High School student engagement, viewed from cognitive, affective, and behavioral aspects, based on library studies?
4. What factors influence the successful optimization of instructional management through gamification in enhancing Junior High School student engagement, according to the literature review?
5. What are the implications of the literature findings for the development of gamification-based instructional management strategies at the Junior High School level?

### **Research purposes**

Based on the above problem, the researcher has a goal.

1. To analyze the concept of instructional management that is relevant to the implementation of gamification, based on a comprehensive literature review.

2. To identify the various forms of gamification implementation in learning environments at the Junior High School level, as evidenced by prior research findings.
3. To examine the role of gamification-based instructional management in enhancing Junior High School student engagement, specifically regarding cognitive, affective, and behavioral aspects, based on library studies.
4. To determine the factors that influence the successful optimization of instructional management through gamification in the context of increasing Junior High School student engagement.
5. To formulate the implications of literature findings for the development of gamification-based instructional management strategies at the Junior High School level.

## LITERATURE REVIEW

### Concept of Learning Management

Instructional management is a systematic process of managing learning activities so that educational goals can be achieved effectively and efficiently. It encompasses the efforts of planning, organizing, implementation, and evaluation of all learning components, involving educators, learners, materials, methods, and the learning environment (Ahmad et al., 2025). In the context of formal education, instructional management is not merely oriented toward administrative aspects but also toward the management of instructional strategies capable of improving the quality of the process and student learning outcomes (Budi & Richana, 2025).

The function of instructional management consists of four main stages: planning, organizing, implementation, and evaluation. Instructional planning includes setting objectives, structuring materials, selecting methods, and determining learning media that align with the characteristics of learners (Nurhikmah, 2024). Organizing is carried out by managing learning resources, time, and the division of roles within the teaching and learning process. Implementation constitutes the stage of executing the lesson plan in the classroom, whereas evaluation serves to assess the achievement of learning objectives while acting as a basis for instructional improvement in the subsequent stage (Ahmad et al., 2025).

In the context of Junior High School, the teacher holds a strategic role as an instructional manager responsible for the management of the entire teaching and learning process in the classroom. As an instructional manager, the teacher plays a role in designing lesson plans, organizing activities and learning resources, executing interactive instruction, and evaluating the process and student learning outcomes (Peran Guru sebagai Manajer Pembelajaran, 2024). This role demands the teacher's pedagogical and managerial competence to create a conducive learning environment that is adaptive to the characteristics of Junior High School students and fosters active student engagement in learning (Budi & Richana, 2025).

### Characteristics of Learning in Junior High School (SMP)

Junior High School students are in the early adolescent development phase, characterized by significant changes in cognitive, social, and emotional aspects. Cognitively, students begin entering the *formal operational* stage, where they are capable of abstract, logical, and reflective thinking, although they still require guidance in developing higher-order thinking skills (OECD,

2021). In terms of social and emotional aspects, Junior High School students tend to have a strong need for social recognition, interaction with peers, and high emotional sensitivity; consequently, the learning process must pay attention to social relationship aspects and a supportive classroom climate (Santrock, 2022). These developmental characteristics demand a learning approach that is not solely content-oriented but also focused on meaningful and contextual learning experiences (Putri & Wahyudi, 2023).

In addition to these developmental changes, Junior High School students possess diverse learning styles and needs, aligning with the characteristics of early adolescence, which tend to be active, explorative, and prone to boredom. Recent literature indicates that students at this level are more interested in learning that is varied, interactive, and involves visual, kinesthetic, and collaborative activities (Rahman et al., 2024). However, instruction in Junior High Schools also faces various challenges, particularly in enhancing student engagement, such as low learning motivation, teaching methods that remain teacher-centered, and a lack of instructional strategy variations suited to student characteristics (Sari & Nugroho, 2022). Therefore, understanding the characteristics of learning in Junior High School serves as a fundamental basis for teachers in designing instructional management capable of enhancing active student engagement cognitively, affectively, and behaviorally.

### **The Concept of Gamification in Education**

Gamification in education is understood as the application of game elements into non-game learning contexts with the aim of enhancing student motivation, engagement, and learning experience. The game elements in question include points, levels, badges, challenges, feedback, and leaderboards, which are systematically integrated into learning activities (Sailer & Sailer, 2021). In current educational literature, gamification is viewed not merely as a strategy to make learning more enjoyable, but as a pedagogical approach designed to positively influence student learning behavior through intrinsic and extrinsic motivation mechanisms (Dichev & Dicheva, 2023).

Furthermore, research from the last five years indicates that gamification possesses high relevance within the context of formal education, particularly at the Junior High School level, as it aligns with the characteristics of early adolescent students who favor challenges, competition, and social interaction. Well-designed gamification can enhance cognitive engagement through the completion of challenges, affective engagement through a sense of enjoyment and achievement, and behavioral engagement through active participation in learning (Zainuddin et al., 2022). However, the effectiveness of gamification is heavily dependent on instructional design and its integration with learning objectives; therefore, appropriate instructional management is required to ensure that gamification serves not only as entertainment but truly supports the achievement of student competencies (Sailer & Homner, 2020; Dichev & Dicheva, 2023).

### **Gamification as a Learning Strategy**

Gamification as a learning strategy refers to the use of game elements and mechanics that are systematically integrated into instructional design to achieve specific pedagogical objectives. Unlike *game-based learning*, which utilizes games as the primary medium, gamification places greater emphasis on the incorporation of game elements into existing learning activities—such

as awarding points, levels, challenges, and feedback—to enhance student motivation and participation (Zainuddin et al., 2022). From a pedagogical perspective, gamification is viewed as an active learning strategy capable of fostering student engagement cognitively and affectively through learning experiences that are challenging, meaningful, and goal-oriented (Sailer & Sailer, 2021)

In its implementation, gamification as a learning strategy requires planning and management that align with learning objectives, student characteristics, and the classroom context. Recent research indicates that systematically designed gamification can improve learning focus, persistence, and active student participation, particularly at the Junior High School level, where students tend to favor competitive and collaborative activities (Dichev & Dicheva, 2023). However, several studies also emphasize that the application of gamification that is not integrated with sound instructional management risks reducing learning effectiveness, as students may become more focused on gaming aspects rather than the achievement of learning competencies (Klock et al., 2021). Therefore, gamification as a learning strategy must be managed both pedagogically and managerially to contribute optimally to the enhancement of student engagement and learning outcomes.

### **Student Engagement in Learning**

Student engagement is a multidimensional concept describing the extent of students' active participation in the learning process across cognitive, affective, and behavioral domains. Cognitive engagement relates to students' mental effort in comprehending material and solving problems; affective engagement pertains to students' interest, motivation, and attitudes toward learning; whereas behavioral engagement is reflected in students' active participation in learning activities, such as asking questions, engaging in discussions, and completing assignments (Fredricks et al., 2021). Recent literature emphasizes that student engagement is a key factor in enhancing the quality of the learning process and contributes directly to the achievement of optimal learning outcomes (Reeve, 2023).

In the context of Junior High School, student engagement presents a distinct challenge as students are in the early adolescent phase, which is susceptible to declining learning motivation and boredom with conventional instructional methods. Research from the last five years indicates that low student engagement is often attributed to a lack of instructional variety, minimal two-way interaction, and a lack of relevance between the subject matter and students' experiences (Bond et al., 2020; Sinatra et al., 2022). Therefore, enhancing student engagement requires instructional strategies capable of stimulating active participation, providing meaningful learning experiences, and creating a learning environment that supports students' psychological needs. In this regard, student engagement is viewed not merely as an outcome of learning, but also as a critical indicator of the success of the instructional management and strategies implemented by teachers (Reeve, 2023).

### **The Relationship between Gamification and Student Engagement**

The relationship between gamification and student engagement can be elucidated through the theoretical foundations of learning motivation and engagement theory. Gamification leverages game elements to fulfill students' basic psychological needs, such as the need for competence, autonomy, and social relatedness, which in turn can enhance student learning engagement

(Sailer & Sailer, 2021). Recent research demonstrates that the application of gamification is capable of increasing cognitive engagement through challenge completion and problem-solving, affective engagement through a sense of enjoyment and learning satisfaction, and behavioral engagement through active participation in learning activities (Zainuddin et al., 2022). Thus, gamification functions not merely as a motivational tool but also as a pedagogical approach that fosters student engagement holistically.

In the context of Junior High School, the relationship between gamification and student engagement becomes increasingly relevant due to the characteristics of early adolescent students who favor interactive, competitive, and collaborative activities.

### Overview



The visualization showcases a Venn diagram representing the Self-Determination Theory of motivation, which postulates three innate and universal psychological needs: competence, autonomy, and relatedness, which are essential for fostering optimal functioning and well-being, growth, and integrity. At the center of the diagram is a small red area where all three needs intersect, representing the ideal state of intrinsic motivation. When all three psychological needs are satisfied, individuals experience the highest levels of well-being and are more likely to be intrinsically motivated.

#### 1. **Competence**

The top circle represents competence, which is the need to feel effective and capable in one's actions. Individuals have a natural desire to master challenges and develop their skills, which contributes to a sense of accomplishment and self-worth.

#### 2. **Relatedness**

To the left, the purple circle represents relatedness, the need to feel connected to others and have a sense of belonging. This involves forming meaningful relationships and feeling cared for by others, which is essential for social and emotional well-being.

#### 3. **Autonomy**

To the right, the orange circle represents autonomy, the need to feel in control of one's own life and make choices that align with one's values and interests. Autonomy is about having a sense of agency and being able to act in accordance with one's own will, rather than being controlled by external forces.

Studies from the last five years indicate that appropriately designed gamification can improve student attendance, participation in discussions, and persistence in completing learning tasks (Klock et al., 2021; Dichev & Dicheva, 2023). However, the effectiveness of gamification in enhancing student engagement is heavily influenced by the quality of instructional design and classroom management implemented by teachers. Gamification that is not integrated with learning objectives carries the potential to only increase transient engagement without significantly impacting the long-term learning process. Therefore, the relationship between

gamification and student engagement must be understood within an instructional management framework that is planned, directed, and oriented toward the achievement of student learning competencies.

### **Optimization of Gamification-Based Instructional Management**

The optimization of gamification-based instructional management constitutes a systematic effort to integrate game elements into all functions of instructional management, encompassing planning, organizing, implementation, and evaluation. At the planning stage, gamification is optimized through the design of learning objectives, the selection of relevant game elements, and alignment with student characteristics and needs (Sailer & Sailer, 2021). The organizing stage includes the management of learning resources, the arrangement of challenge-based learning activities, and the allocation of student roles within collaborative learning activities. With structured management, gamification can function as a pedagogical strategy that supports the attainment of learning objectives, rather than merely serving as an entertainment activity (Zainuddin et al., 2022).

Furthermore, the optimization of gamification-based instructional management is significantly determined by the role of the teacher as an instructional manager capable of managing classroom dynamics and student engagement sustainably. Recent research indicates that teachers possessing strong managerial and pedagogical competence are able to leverage gamification to enhance cognitive, affective, and behavioral student engagement, particularly at the Junior High School level (Dichev & Dicheva, 2023). Moreover, the evaluation stage in gamification-based instructional management is crucial for assessing the effectiveness of the implemented strategy, both through the assessment of learning outcomes and reflection on the level of student engagement (Klock et al., 2021). Thus, the optimization of gamification-based instructional management demands meticulous planning, consistent implementation, and continuous evaluation to yield a positive impact on the quality of learning and student engagement in an optimal manner.

## **RESEARCH METHOD**

### **Research Design**

This study employs a **qualitative approach** utilizing a **library research** design. Qualitative research aims to understand phenomena holistically and contextually based on descriptive data derived from relevant scientific literature, excluding quantitative statistical analysis. In an educational context, library research enables the researcher to explore, analyze, and synthesize theoretical and empirical findings related to the application of gamification and its correlation with **Junior High School (SMP)** student engagement within the scope of learning management in depth. A literature review is a method that analyzes various existing written sources—such as books, journals, and research reports—to address research questions without conducting field data collection. This approach aligns with the descriptive and inductive characteristics of qualitative research (Fadli, M.R. 2021).

### **Data Types and Sources**

This research utilizes qualitative data that is descriptive and conceptual in nature. In this library research study, the qualitative data consists of ideas, concepts, theories, models, and previous

research findings related to the topic under study. This data is not obtained through fieldwork; rather, it is derived from the review and analysis of various scientific literature sources. This approach was chosen because the research aims to gain a profound and comprehensive understanding of optimizing learning management through gamification to enhance junior high school student engagement, based on existing theoretical and empirical studies.

The data sources in this research are entirely secondary, obtained from various relevant and credible bibliographic materials. These data sources include:

- a. **Scientific Journal Articles** National and international journal articles discussing learning management, gamification in education, and student engagement at the junior high school level. Journal articles are used as the primary source as they contain empirical research findings and up-to-date theoretical developments.
- b. **Academic Books** Textbooks and academic reference books discussing learning management theories, innovative learning strategies, gamification, and educational psychology. Academic books are used to strengthen the theoretical foundation of the research.
- c. **Education Policy Documents** Official documents issued by educational institutions or the government, such as curriculum policies, learning guidelines, and other supporting documents relevant to the implementation of learning innovations and the enhancement of student engagement.

All data sources are analyzed systematically through a process of selection, thematic grouping, and conceptual synthesis to gain a holistic understanding of optimizing learning management through gamification to enhance junior high school student engagement.

### Population and Sample

The study's sample size includes Indonesian manufacturing companies using digital manufacturing systems, digital twin technology development, and metaverse business platforms. The sample that is used uses purposeful sampling with criteria:

1. The company has implemented an ERP system and has at least three years of balance sheet data.
2. Providing participation in system testing.
3. Possessing funding IT infrastructure, the number of companies is three for the initial phase of development and five for the long-term trials.

### Data Collection Techniques

The data collection techniques in this study were carried out through three main methods, namely direct observation, in-depth interviews, and documentation studies. Observations were made on the Information Technology (IT) system and accounting processes in the Partner company to understand the data flow and system integration needs in implementing the Digital Twin concept. In-depth interviews were conducted with several parties, including financial managers using 5-7 structured questions related to the need for real-time financial reporting, IT

managers to discuss the technical aspects of system integration, and accounting experts to verify accounting concepts in the context of digitalization. Meanwhile, documentation studies included analysis of historical financial reports such as balance sheets and income statements, accounting procedure manuals, ERP system documentation, and applicable accounting standards such as PSAK and IFRS.

### **Documentation Study**

Documentation analysis was carried out on several important documents to gain a deeper understanding, including:

1. Historical financial reports such as balance sheets and profit and loss statements.
2. Accounting procedure manual used by the company.
3. ERP (Enterprise Resource Planning) system documentation.
4. Applicable accounting standards, such as PSAK and IFRS.

### **Data Analysis Techniques**

Data analysis techniques in this study include qualitative, quantitative, and technological analysis. Qualitative analysis is conducted through content analysis of interview data and documentation to identify existing needs and problems, and through thematic analysis to determine the main themes in the implementation of Digital Twin accounting. Quantitative analysis is conducted with a statistical approach to measure the accuracy of real-time simulations compared to actual data, using indicators such as MAPE (Mean Absolute Percentage Error), RMSE (Root Mean Square Error), and Pearson correlation between simulated data and actual data. Meanwhile, technological analysis focuses on evaluating system performance including reliability, throughput, and latency, as well as integration analysis to assess the effectiveness of integration between the ERP system, Digital Twin Engine, and Metaverse Platform.

## **RESULTS AND DISCUSSION**

### **Learning Management Concepts Relevant to the Application of Gamification**

The concept of learning management within the context of gamification integrates traditional learning theories with game elements to enhance student motivation and engagement. Gamification is defined as the application of game mechanics and dynamics in non-game contexts to stimulate a more engaging and meaningful learning experience. Common elements used include points, badges, leaderboards, challenges, and real-time feedback designed to align with learning objectives.

According to recent studies, effective gamification implementation positions these elements as part of a learning management strategy oriented toward competence and learning motivation. This is supported by theoretical frameworks such as **Self-Determination Theory** and **Flow Theory**, which explain the relationship between autonomy, competence, and the joy of learning.

Pedagogically, gamification serves as a modern *instructional design* strategy that blends teaching practices with the achievement of learning goals through structured, dynamic experiences.

### Forms of Gamification Implementation in Junior High School (SMP) Learning

Literature findings demonstrate various forms of gamification implementation in junior high schools, including:

- **Point mechanics and rewards:** Used for every task achievement or student challenge to spur motivation and learning continuity; points and challenges increase activity levels in learning activities.
- **Badges and level progression:** Serve as competitive rewards or qualitative achievements that visualize student learning progress.
- **Leaderboards:** Display student performance rankings to create a healthy competitive atmosphere.
- **Instant feedback and collaborative challenges:** Encourage discussion and interaction among students in the classroom.

These forms indicate that gamification implementation is directed toward making the learning experience more contextual, interactive, and suited to the developmental characteristics of adolescents in SMP, thereby motivating them to participate more actively.

### The Role of Gamification-Based Learning Management in Enhancing SMP Student Engagement

Literature identifies that gamification plays a crucial role in three aspects of student engagement:

- a. **Cognitive Aspect** Gamification helps increase cognitive engagement by boosting interest and motivation in learning tasks, as well as engagement in problem-solving and deeper conceptual understanding. Elements such as challenges and real-time feedback encourage students to think actively and reflectively during the learning process.
- b. **Affective Aspect** Gamification strengthens students' emotional commitment to learning by creating an atmosphere that is enjoyable, appreciative, and intrinsically motivating. Motivational elements like rewards, challenges, and personal progress help improve self-confidence and student learning satisfaction.
- c. **Behavioral Aspect** Gamification has been proven to increase observable participation in the classroom, such as active questioning, responsiveness to teacher instructions, timely task completion, and engagement in group collaboration. This leads to a tangible increase in behavioral engagement within the SMP environment.

Overall, learning management with gamification strengthens student engagement holistically—cognitively, affectively, and behaviorally—when its design elements are well-integrated into the learning curriculum.

### **Factors Affecting the Successful Optimization of Gamification in Enhancing SMP Student Engagement**

Several key factors found in the literature review regarding the success of gamification include:

- **Appropriate Gamification Design:** Success is determined by the alignment of gamification elements with learning objectives, student needs, and the classroom context.
- **Teacher Readiness and Competence:** Teachers who understand the concept of gamification and are able to integrate it pedagogically tend to produce higher student engagement.
- **Technological Infrastructure:** The availability of technological devices and adequate access enables sustainable gamification implementation, especially when using digital platforms.
- **Initial Student Motivation & Social-Emotional Conditions:** Students' baseline motivation levels and social support within the class influence how gamification is received and its impact on learning engagement.

These factors indicate that gamification is not an automatic solution; its success depends on planning, resource support, and the understanding of educational stakeholders in integrating it into learning management.

### **Implications of Literature Review Findings for the Development of Gamification-Based Learning Management Strategies in SMP**

The findings of the literature review have several important implications:

- **Learning management strategies must be adaptive and contextual:** The use of gamification elements needs to be tailored to the characteristics of SMP students and targeted learning competencies.
- **Teacher Capacity Development:** Teacher training in gamification design and implementation is critical for this strategy to be effectively applied in real classroom contexts.
- **Collaborative Interdisciplinary Approach:** Integration between technology, pedagogy, and curriculum content is essential to maximize the impact of gamification on student engagement.
- **Continuous Evaluation:** Gamification implementation needs to be accompanied by mechanisms to evaluate student engagement both quantitatively and qualitatively to adjust learning strategies dynamically.

### **Research Discussion**

Optimizing learning management through gamification is viewed as a strategic approach to enhancing the engagement of Junior High School (SMP) students. Based on various literature reviews, gamification is capable of integrating game elements—such as points, levels, challenges, and rewards—into the learning process, thereby creating a more engaging and interactive learning environment. From a learning management perspective, gamification functions not only as a method for material delivery but also as a systematic classroom

management tool, ranging from activity planning and task organization to the evaluation of learning outcomes. This aligns with learning motivation theories that emphasize the importance of intrinsic drive and meaningful learning experiences for adolescent learners.

Results from previous research indicate that the planned application of gamification can increase active student participation across cognitive, affective, and social dimensions. In the context of Junior High School, students are in a developmental phase that requires a variety of stimuli and challenges suited to their age characteristics. When well-managed by the teacher, gamification can improve focus, a sense of responsibility, and cooperation among students. Literature studies also reveal that student engagement increases when gamification-based learning management balances competition and collaboration, thereby not only fostering a spirit of achievement but also building a positive learning climate.

However, the effectiveness of gamification in learning management relies heavily on teacher readiness and support from the school system. Literature shows that without mature planning, gamification has the potential to become merely an entertainment activity with little impact on achieving learning objectives. Therefore, optimizing learning management through gamification demands the teacher's ability to design strategies that are aligned with the curriculum, student characteristics, and clear indicators of learning engagement. Thus, this literature study asserts that gamification is a promising approach to increasing Junior High School student engagement, provided it is implemented in a structured, reflective, and sustainable manner.

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