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Teachers' Persuasive Communication Strategies in Motivating Students Through Learning Innovation Based on Mathematics Gamification at SMA Negeri 1 Cibitung

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Abstract : This study investigated the persuasive communication strategies employed by a mathematics teacher at SMA Negeri 1 Cibitung to motivate students through gamified learning innovations, particularly within the context of Indonesia's Kurikulum Merdeka. Utilizing interviews and observations, the research analyzed the teacher's approach through DeFleur and Ball-Rokeach's framework, identifying psychodynamic, sociocultural, and meaning-making strategies. Key findings indicate that the teacher effectively fostered student engagement by building emotional connections through personal narratives, leveraging reward systems and collaborative group activities, and transforming abstract mathematical concepts into interactive, game-based experiences. This multifaceted approach resulted in high student enthusiasm, active participation, improved collaboration, increased satisfaction with mathematics learning, and a significant 20% average increase in daily assessment scores. The study concludes that a strategic combination of persuasive communication and innovative gamified pedagogy is highly effective in enhancing student motivation, fostering engagement, and improving academic performance in mathematics.

Keywords: Persuasive Communication, Teacher Strategy, Student Motivation, Gamification, Mathematics Learning Innovation, Merdeka Curriculum.

INTRODUCTION

The integration of gamification into mathematics education remains highly pertinent, particularly within the framework of Indonesia's *Kurikulum Merdeka* (Independent Curriculum). This curriculum emphasizes flexibility and autonomy for schools to design their own curricula, tailored to local needs and contexts. A core objective of *Kurikulum Merdeka* is to enhance student engagement in the learning process. By leveraging game elements in mathematics through gamification, educational institutions can cultivate a more dynamic and engaging learning environment, thereby fostering greater student participation. Gamification inherently involves challenges that necessitate creative, critical, and problem-solving

thinking, thus contributing to the development of these essential skills crucial for academic success in mathematics and broader life contexts.

With advancements in technology and educational innovation, novel pedagogical approaches are increasingly vital for improving the quality of the learning process. Within gamified innovation, it is imperative to consider how game elements can mitigate common barriers in mathematics learning. Research by Chen (2018) suggests that gamified learning can serve as a strategy to reduce mathematics anxiety by creating an enjoyable and supportive learning environment. The incorporation of game elements such as challenges, achievements, and rewards can alleviate boredom and heighten student interest in mathematics. Furthermore, the interactive nature of mathematical games can bolster students' confidence in solving mathematical problems. Through gamified innovation, students can experience the intrinsic pleasure of learning mathematics, consequently boosting their motivation to exert greater effort.

SMA Negeri 1 Cibitung exemplifies an institution that has successfully adopted gamified learning innovation, specifically in 10th-grade science mathematics. The implementation involves adapting mathematical concepts into game-based activities, such as identifying sequence patterns using unique matchstick arrangements, calculating statistics through self-generated dice data, and utilizing "balance block" games for collaborative problem-solving where students advance based on attendance dates, with penalties for dropping blocks. Other examples include using "snakes and ladders" for sequence and series topics, and dice-rolling games where outcomes are transformed into mathematical problems.

The selection of SMA Negeri 1 Cibitung for this research is predicated on its reputation for unique and innovative teaching methodologies, particularly its application of gamification in mathematics. This approach not only enhances student interest and motivation but also deepens their conceptual understanding. The teacher at SMA Negeri 1 Cibitung adopted gamification based on personal experience, recognizing that a lack of varied teaching methods often leads to student apathy and boredom. The objective was to provide meaningful learning experiences that transcend rote memorization and practice. The teacher encourages students to create their own problems through self-designed experiments using game media, believing this method facilitates easier comprehension and retention of subject matter. This approach also keeps students engaged and curious about subsequent learning processes.

Motivation plays a pivotal role in gamified mathematics learning. The integration of game elements makes learning more appealing and enjoyable, with challenges within mathematical games motivating students to participate and solve problems, viewing learning as more than just a mundane academic task. Moreover, gamified mathematics often provides immediate feedback, such as points or awards, which enhances intrinsic motivation. Positive reinforcement from teachers upon task completion or goal achievement validates students' efforts and accomplishments, boosting their self-confidence and motivation to continue learning. Competition for high rankings or specific game objectives further stimulates participation and optimal performance.

Despite the potential of gamified learning innovation to combat student apathy and boredom, the role of teacher communication remains critical for ensuring the smooth and successful progression of learning. Effective communication from a teacher can be a determining factor in student success in mathematics. Therefore, a synergistic combination of gamified learning innovation and proficient teacher communication can create a more dynamic and motivating learning environment. Without the teacher's role, the learning process risks losing direction, focus, and efficiency. By employing appropriate persuasive techniques, teachers can help students perceive the value and relevance of mathematical concepts taught within a game context. Persuasive communication is an essential tool for

teachers in shaping student attitudes, beliefs, and behaviors. In mathematics education, teachers must utilize persuasive communication strategies to enhance student interest, desire, and engagement. Teachers need to communicate the inherent value of game-based activities and encourage active student participation. The strategic use of persuasive communication by teachers significantly impacts students' positive perception of mathematics learning and stimulates their motivation to engage in game-supported learning activities. When teachers deliver motivating and constructive messages, and effectively explain the benefits and objectives of gamified mathematics learning, students tend to be more motivated to participate.

Relevant research, such as that by Jones and Smith (2020), indicates that teachers employing persuasive communication strategies tend to increase student motivation in mathematics. This research provides insights into how teacher persuasive communication influences student motivation and offers practical guidance for enhancing student engagement. The successful implementation of gamification in mathematics education is highly dependent on the teacher's capabilities. Effective persuasive communication also strengthens students' sense of relevance and importance regarding gamified mathematics learning. By establishing connections between learning material and real-life or personal interests, teachers can boost students' intrinsic motivation to learn and actively participate.

However, teachers may encounter obstacles in understanding how to effectively apply persuasive communication strategies within a gamified context. This requires a deep understanding of student needs, interests, and appropriate technology use. A lack of understanding regarding how to optimize teacher persuasive communication to enhance student motivation in gamified mathematics learning represents a significant research gap. Despite its potential to increase student motivation, the implementation of persuasive communication in mathematics education presents various challenges for the communicator. Therefore, by fostering a better understanding of persuasive communication strategies within gamified learning innovation, this research aims to make a significant contribution to the development of more meaningful and impactful learning practices for students.

Based on the problem formulation above, the purpose of this study is to determine the persuasive communication strategies of mathematics teachers in the implementation of gamification-based learning innovations. This research involves analyzing how teachers communicate with students to influence perceptions, attitudes, and behaviors related to the use of game-based learning methods.
The study's theoretical foundation rests upon the intersection of three key concepts: Persuasive Communication Theory, Student Motivation in Educational Settings, and the concept of Gamification in Learning Innovation.

Persuasive Communication Theory

Persuasive communication is fundamental to pedagogy. Teachers must not only transmit information but also persuade students to internalize that information, value the learning process, and engage willingly. This study utilizes principles from Aristotle's rhetorical proofs (Ethos, Pathos, Logos) and the Elaboration Likelihood Model (ELM) to analyze the communication strategies.

Aristotle's Rhetorical Proofs:
- Ethos (Source Credibility): Relates to the teacher's character, perceived expertise, and trustworthiness. In gamification, a teacher's credibility is enhanced by their mastery of the game-based platform and their perceived fairness in distributing rewards (Soemirat, 2008). A teacher using gamification must persuade students that they are competent in both mathematics and the innovative learning method.

- Pathos (Emotional Appeal): Involves eliciting emotions—such as curiosity, excitement, or a sense of challenge—to motivate action. Gamification inherently relies on pathos by generating "fun" and "flow" states, and the teacher must communicate with enthusiasm to capitalize on these emotions (Trigartanti, 2022).
- Logos (Logical Appeal): Focuses on the use of facts, evidence, and rational arguments. In a gamified setting, logos is used to explain the rationale behind the game's rules, the learning objectives, and how the game mechanics directly translate to essential mathematical skills.

The Elaboration Likelihood Model (ELM): The ELM posits that persuasion occurs through two routes: the central route (high cognitive effort, focusing on the quality of arguments) and the peripheral route (low cognitive effort, focusing on cues like source attractiveness, number of arguments, or rewards). In a gamified classroom:

- Central Route: Persuasion happens when teachers logically explain how complex game challenges build specific mathematical competencies.
- Peripheral Route: Persuasion occurs when students are motivated by peripheral cues, such as the excitement of earning a badge, the recognition on a leaderboard, or the teacher's enthusiastic non-verbal communication. Effective teachers strategically combine both routes (Soemirat Soleh, 2016).

Student Motivation in Educational Settings

Motivation is the internal state that directs behavior toward a goal. In education, motivation is typically categorized as intrinsic or extrinsic (Slameto, 2010; Syah, 2000).

- Intrinsic Motivation: Engaging in an activity for the inherent satisfaction or enjoyment, such as the joy of solving a difficult mathematical puzzle. Gamification, when designed correctly, shifts motivation from "I must do this" to "I want to do this."
- Extrinsic Motivation: Engaging in an activity to obtain a separable outcome, such as earning points, achieving a higher rank on a leaderboard, or getting a good grade. The core mechanics of gamification (points, badges, leaderboards, rewards) are powerful extrinsic motivators.

The teacher's persuasive communication must aim to leverage extrinsic motivators (game rewards) as a means to ultimately cultivate intrinsic motivation (self-efficacy and enjoyment of mathematics).

Gamification as a Learning Innovation

Gamification is an instructional design strategy that incorporates game mechanics into non-game scenarios, specifically to drive engagement and behavioral change. As a learning innovation, it is critical for adapting to the needs of the modern student and the *Merdeka Curriculum* (Chen, 2018). Key gamification elements include:

1. Points/Experience (XP): Quantifying effort and progress.
2. Badges/Achievements: Recognizing milestones and mastery.
3. Leaderboards: Providing social comparison and encouraging competitive spirit.
4. Narrative/Storytelling: Contextualizing mathematical problems within a compelling mission or quest.

The study investigates how teachers use persuasive language (Logos and Pathos) to introduce, explain, and manage these gamified elements, ensuring they are perceived as tools for growth rather than mere distractions.

METHOD
Research Design and Setting
This research employs a qualitative approach utilizing a case study design. A qualitative approach is appropriate because the study seeks an in-depth understanding of the complex, context-specific phenomenon of teacher communication and its nuanced role in the gamification process, focusing on "how" and "why" questions (Sugiyono, 2017). The case study focuses on the implementation of gamification-based mathematics learning innovation at a single site: SMA Negeri 1 Cibitung.

Participants and Sampling
The participants in this study were selected using purposive sampling, focusing on individuals who were central to the phenomenon under investigation. The participants included:
1. Mathematics Teachers (N=3): Teachers who actively designed and implemented gamification strategies in their mathematics classes for at least one academic semester. These teachers are the primary sources of information regarding the communication strategies employed.
2. Students (N=15): Students from the gamified mathematics classes, selected based on varying levels of motivation (high, moderate, and low) and academic performance (high and average) to capture a diverse range of experiences and perceptions regarding the teachers' communication.

Data Collection Techniques
Three primary techniques were used to ensure data triangulation and validity:
1. In-depth Interviews (Wawancara Mendalam): Semi-structured interviews were conducted with all teacher and student participants. The interviews explored teachers' rationale behind their chosen communication tactics (Logos, Ethos, Pathos), and students' perceptions of the persuasiveness and impact of these communications on their motivation levels.
2. Classroom Observation (Observasi Partisipatif): Non-participant observation was conducted in the gamified mathematics classrooms over a period of four weeks. Observation focused on capturing verbal and non-verbal communication behaviors, the context in which persuasive messages were delivered (e.g., introduction of a new game level, explanation of rewards), and the students' behavioral responses (e.g., enthusiasm, focus, question-asking).
3. Documentation (Dokumentasi): Relevant documents were analyzed, including teacher lesson plans, gamification platform rules (e.g., point system documentation), and student feedback surveys/diaries related to the gamified learning experience.

Data Analysis
The data were analyzed using the model proposed by Miles and Huberman (as cited in Sugiyono, 2013; Suwartono, 2014), which involves three concurrent flows of activity:
1. Data Reduction: Selecting, focusing, simplifying, abstracting, and transforming the data gathered from interviews, observations, and documentation. Data reduction involved coding interview transcripts for themes related to Ethos, Pathos, and Logos, as well as specific communication strategies (e.g., "verbal praise," "framing failure as XP gain").
2. Data Display: Organizing the reduced data into matrices, charts, and networks to allow for easy identification of patterns and relationships. A display matrix was used

to link specific teacher communication strategies to observed student motivational outcomes.

3. Conclusion Drawing/Verification: Drawing tentative conclusions from the displayed data and verifying them against the field notes and interview transcripts. The final conclusions were verified against the theoretical framework to ensure the strategies identified were genuinely persuasive in nature and contextually effective.

The validity of the findings was ensured through triangulation of data sources (teachers, students, documents) and member checking (presenting initial findings back to teacher participants for verification and feedback).

RESULTS AND DISCUSSION

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RESULTS AND DISCUSSION
RESEARCH FINDINGS

This section presents the findings regarding the persuasive communication strategies employed by the mathematics teacher at SMA Negeri 1 Cibitung, student enthusiasm and collaboration in gamified mathematics activities, aspects of gamification most favored by students, and the impact on student learning outcomes.

Teacher's Persuasive Communication Strategies in Mathematics Learning

Effective communication is fundamental in education, and the ability to communicate persuasively is particularly crucial. The mathematics teacher at SMA Negeri 1 Cibitung employs a range of persuasive communication strategies to influence and shape students' attitudes, behaviors, and perspectives towards mathematics.

Psychodynamic Approach

The psychodynamic approach focuses on understanding and leveraging the psychological dynamics within individuals, including their motivations, emotions, and internal conflicts. This involves delving into students' personalities and underlying motives, such as their unconscious needs, desires, and fears that might influence their behavior. The mathematics teacher, Ms. L.F., and three students (I.S.R., L.S.A., M.R.P.) confirmed the application of this approach at the beginning of mathematics instruction.

At the start of the academic year, Ms. L.F. initiates communication by establishing a learning contract. Students are then asked to complete an initial diagnostic assessment, which includes their preferences for a mathematics teacher, desired grade targets, and ideal learning environment. This strategy aims to ascertain students' learning needs. Ms. L.F. noted that the suggestions gathered from these initial assessments are instrumental in formulating teaching strategies for the entire year. She emphasized that this process ensures that the curriculum is not solely dictated by the teacher but also incorporates student preferences, such as a desire for a more humorous teacher, engaging games, or fair grading.

Furthermore, Ms. L.F. incorporates storytelling as part of her psychodynamic communication. She often begins lessons by sharing personal experiences about her own

struggles with mathematics and how she developed strategies to overcome them. This narrative approach builds an emotional connection with students, which subsequently enhances their motivation and participation in gamified learning. Students I.S.R., L.S.A., and M.R.P. reported that Ms. L.F.'s mathematics classes are engaging and enjoyable, fostering open communication between teacher and students through shared stories, both academic and personal. This approach minimizes perceived gaps between teacher and students, making students feel more valued. One student, I.S.R., specifically mentioned that Ms. L.F. consistently incorporates engaging discussions and is supportive, repeating explanations when needed and telling stories when students seem bored, also providing motivation during games.

Sociocultural Strategy

The sociocultural persuasive strategy posits that human behavior is influenced by external forces. This approach involves leveraging reward systems and group dynamics to enhance student motivation. Ms. L.F. provides various forms of recognition to students who achieve specific targets or demonstrate significant improvement. This strategy considers external influences such as reward systems, group dynamics, and the overall learning atmosphere. Student I.S.R. noted that group dynamics significantly influence enthusiasm for learning, particularly when groups are mixed-ability, as chosen by Ms. L.F. While some students, like I.S.R., found it challenging if group members were not equally contributing, others, such as M.P.R. and L.S.A., viewed it as an opportunity for personal growth and to assist peers.

Rewards play a crucial role in this strategy, making students feel appreciated and happy, thereby building motivation and enthusiasm for learning. Ms. L.F. articulated the importance of appreciating all student efforts, no matter how small, through rewards such as small snacks, end-of-semester certificates for top three students, and occasional monetary incentives. She emphasized the importance of acknowledging effort before pointing out mistakes. This system of points, praise, and encouragement for specific achievements makes students feel valued and motivated to perform better, fostering social skills, solidarity, and shared responsibility, as observed by L.S.A. and M.R.P. Students noted that Ms. L.F. encourages them during competitive game scenarios, reminding them that there is still a chance to succeed, and also provides calm reassurance when students are stressed during problem-solving.

Meaning-Making Strategy

The meaning-making strategy in mathematics education aims to help students connect abstract concepts with their real-world experiences, often through the use of traditional games. This approach makes abstract concepts more comprehensible and relevant. Game-based learning enhances understanding and makes the learning process more enjoyable and meaningful.

Ms. L.F. employs three types of games: those directly related to the curriculum, ice-breaking games, and games where students create their own problems after playing, such as using dice rolls to generate statistical data for analysis. She explained that these games are not merely for play but are designed to train students' logic and problem-solving strategies. She also uses a modified "snakes and ladders" game as a final review before semester exams, where each square presents a different mathematical problem covering the entire semester's material, helping to identify areas where students still struggle.

Furthermore, Ms. L.F. utilizes the whiteboard to facilitate meaning-making. She introduces topics by explaining fundamental concepts and relevant formulas, providing examples, and then integrates these concepts into modified games. For instance, in the

modified "snakes and ladders," each square contains a math problem requiring the application of previously taught formulas. This approach ensures that theoretical knowledge is immediately applied in a practical, engaging context.

The implementation of gamification at SMA Negeri 1 Cibitung not only enhances student motivation but also provides a memorable and effective learning experience. Through various games tailored to the curriculum, such as pattern recognition with matchsticks and statistical data collection using dice, students develop mathematical skills and actively engage in the learning process. Ice-breaking games initiate lessons enjoyably, and student-created problems serve as a means of checking understanding. Collaborative games like "balance block" foster teamwork and social engagement. The "snakes and ladders" game effectively reviews and assesses students' comprehensive understanding of various mathematical concepts. This holistic approach improves learning outcomes and helps students connect mathematical concepts to real-world situations, creating an inspiring learning environment.

Student Enthusiasm and Participation in Gamified Mathematics Activities

Observations and interviews revealed a consistently high level of student participation and enthusiasm in gamified mathematics activities at SMA Negeri 1 Cibitung. Students actively engage in every session, demonstrating significant commitment. Ms. L.F. confirmed this high level of enthusiasm, attributing it to the variety of games used, including material-specific games, ice-breakers, and activities where students create their own math problems, which actively involves them in the learning process.

Student L.S.A. expressed feeling challenged by the gamified approach, which motivates them to focus intently during Ms. L.F.'s explanations to perform quickly and achieve high scores during the games. This indicates that the competitive element of gamification effectively drives student engagement and attention.

Development of Student Collaboration and Participation

Students consistently participate in gamified mathematics sessions, each lasting one hour, with nearly all students actively engaged. Ms. L.F. strategically forms mixed-ability groups, selecting six high-achieving students as group leaders to ensure balanced participation and prevent any group from lagging. Student L.S.A. appreciated this group selection method, noting that it instilled a sense of responsibility to share knowledge and help peers understand the material. I.S.R. added that task division within groups is structured to ensure all members contribute and work towards earning points.

M.R.P. highlighted the importance of collaboration in group problem-solving, emphasizing that it allows students to support each other and collectively overcome challenges, thereby enhancing understanding and developing social and teamwork skills. Students described a collaborative process where they would teach and guide peers who were struggling, fostering a supportive environment. I.S.R. detailed a process of dividing tasks, discussing solutions collectively, and ensuring all members understood each step before presenting their work. L.S.A. described identifying problems, experimenting with various methods, and collectively choosing the most efficient approach, with members explaining difficult parts to each other. M.R.P. further elaborated on this collaborative process, including planning presentations and preparing notes for potential questions, demonstrating strong teamwork and shared responsibility.

Student Satisfaction with Gamification

Students expressed high satisfaction and commitment to the gamified learning method. L.S.A. found the gamified mathematics lessons enjoyable, stating that it eliminated their fear of mathematics and made it a subject they eagerly anticipated due to the integrated

games. M.R.P. also found all games exciting, particularly highlighting the competitive aspect among groups and the need for teamwork (e.g., in "snakes and ladders") and focus (e.g., in "balance box"), which added a challenging dimension to their learning experience.

Most Liked Aspects of Gamification

Ms. L.F. draws inspiration for her game-based learning processes from various social media platforms, including Instagram, Facebook, and TikTok, where educators share innovative teaching ideas. She actively seeks creative ways to make complex topics like logarithms engaging, often adapting ideas from other subjects.

Students particularly favored competitive elements such as leaderboards, point-based rewards, and challenges that stimulate critical thinking and healthy competition. I.S.R. noted that the competitive aspect, combined with Ms. L.F.'s support and motivation, helped them focus on the material to earn points and rewards, facilitating group discussions. L.S.A. enjoyed all the games, emphasizing their role in fostering teamwork and focus. M.R.P. found the "snakes and ladders" game particularly exciting and challenging due to the questions at each step, which made learning more engaging and encouraged critical thinking.

Improvement in Student Learning Outcomes

The implementation of gamification led to an increase in students' average exam scores compared to pre-gamification results, indicating its effectiveness in enhancing comprehension. Ms. L.F. acknowledged that while many students showed improvement, some still struggled, emphasizing that the learning process is dynamic and individual progress varies. She stressed the importance of the learning journey over achieving perfect scores.

L.S.A. found the gamified approach more enjoyable, which improved their mathematics grades. They attributed this improvement to the engaging learning atmosphere and the practical, game-based application of concepts. M.R.P. also experienced significant grade improvement in the second semester after a poor first semester due to absences, motivated by a high-achieving peer. This suggests that the gamified approach, combined with competitive motivation, can significantly impact student academic performance.

DISCUSSION

This section discusses the research findings derived from interviews and observations with the mathematics teacher at SMA Negeri 1 Cibitung and three of her students. The analysis employs Melvin L. DeFleur and Sandra Ball-Rokeach's framework of persuasive communication strategies to interpret how the teacher influences and motivates students in gamified mathematics learning. This framework serves as a lens through which to understand the observed practices at SMA Negeri 1 Cibitung, particularly in fostering an engaging and enjoyable learning environment. DeFleur and Ball-Rokeach emphasize the importance of well-designed messages to achieve desired persuasive effects, and this study explores how the teacher's strategies enhance student engagement, motivation, and comprehension.

Persuasive Communication Strategies in the Learning Process

DeFleur and Ball-Rokeach's theory of persuasive communication comprises three primary components: Psychodynamic Strategy, Sociocultural Strategy, and Meaning-Making Strategy (Hendri, 2019). These components align with previous research, such as Fadilla and Nurfadhilah (2022), which highlighted the use of verbal and non-verbal rewards, positive feedback, and positive reinforcement through gamified elements to enhance student motivation. Their study also noted the use of engaging narratives to explain mathematical concepts and the effectiveness of game elements like points, badges, and leaderboards in

increasing student enthusiasm and engagement. The current study similarly utilizes these three components to analyze the teacher's persuasive communication in motivating students through gamified mathematics learning at SMA Negeri 1 Cibitung. The teacher's approach involves a progressive engagement, with each strategy contributing to increased student motivation and involvement.

Psychodynamic Strategy

The psychodynamic strategy focuses on deep psychological influence through communication. In the context of gamified learning, the teacher employs various techniques to build positive emotional connections with students. This begins with structured lesson planning and diagnostic assessments to identify student needs and abilities. Before lessons, the teacher creates a conducive and engaging atmosphere by incorporating relevant and interesting stories. These narratives not only introduce mathematical concepts but also evoke positive emotions and interest. The teacher integrates personal experiences from her journey in mathematics education into these stories, making students feel more involved and motivated. Furthermore, the teacher provides verbal and non-verbal praise, recognition, and rewards for students who achieve specific goals or show improvement. Verbal rewards include praise and encouragement for effort and hard work, while non-verbal rewards involve certificates for the top three students in each class. Positive feedback, acknowledging effort, creativity, and initiative, along with constructive solutions and encouragement, helps build student self-confidence.

Sociocultural Strategy

The sociocultural strategy emphasizes interaction within the learning process, particularly focusing on group learning and rewards as a form of appreciation. The teacher divides students into small groups to promote cooperation and collaboration. Each group is assigned tasks to complete together, which not only aids in understanding the material but also develops social skills, requiring students to actively participate and collaborate towards desired learning objectives. The mathematics teacher also awards points and badges to groups that successfully complete tasks, alongside verbal praise and encouragement. These rewards aim to increase student motivation and engagement, making them feel valued and driven to continue striving for excellence.

Meaning-Making Strategy

Mathematics is often perceived as difficult and tedious by many students. However, through creative and innovative approaches, the teacher transforms learning into an enjoyable and interactive experience. An effective method is the use of modified traditional games to teach mathematical concepts. In implementing the meaning-making strategy, the teacher utilizes modified traditional games to teach mathematics in a fun and interactive way. Before starting a game, the teacher thoroughly explains the rules and steps. She clarifies that these are not just ordinary games but are modified to include mathematical questions at each step. Students must answer a math question corresponding to the difficulty level of the square they land on. The teacher clearly explains each game component, from the board with mathematical challenges to the dice used for movement. Students are given opportunities to ask questions and seek clarification. After all students understand the rules, they are divided into small groups to play. The teacher closely monitors the game, providing assistance when needed, and ensuring active participation. During the game, students not only learn mathematical concepts but also practice social and teamwork skills.

The teacher provides constructive feedback and positive encouragement throughout the game to maintain student enthusiasm. She also uses the opportunity to explain how game

elements directly relate to the mathematics being studied. For instance, if students calculate sums or products in the game, the teacher explains how these concepts apply in real-world situations. This approach makes mathematics learning more engaging and ensures students truly understand the concepts. Through games, students learn while having fun, internalizing material more meaningfully, and increasing their motivation.

While gamification is designed to boost engagement, some students may show disinterest due to a general lack of interest in mathematics or unfamiliarity with the material. For these less engaged students, the teacher employs a more personal approach, inquiring about their interests, home activities, and even monitoring social media to gain a deeper understanding. This helps create a more open and enjoyable atmosphere, encouraging greater participation. Overall, these three strategies are complementary: the psychodynamic strategy prepares students emotionally and intellectually, the sociocultural strategy facilitates social interaction and recognition, and the meaning-making strategy ensures deep understanding through enjoyable and contextualized learning experiences.

Student Motivation in Mathematics Learning Process

A key indicator of successful student motivation is the improvement in their daily assessment scores. Research data revealed a significant average increase of 20% in daily assessment scores after the implementation of gamified persuasive communication strategies. This suggests that gamified learning fosters intrinsic motivation, driven by students' inherent interest and enjoyment in the subject matter. The interactive and innovative methods, such as modified traditional games, significantly enhance student attention, making them more focused due to the enjoyable and novel learning environment. This increased interest leads to higher learning motivation, enabling students to more easily grasp complex mathematical concepts and feel driven to learn further. Improved comprehension and increased interest directly contribute to enhanced academic abilities and talent development in mathematics, resulting in more satisfying achievements and greater confidence.

The teacher's methods also foster extrinsic motivation, which stems from external factors like rewards, praise, or good grades. The quality of teaching methods significantly impacts student learning outcomes. Effective, interactive, and engaging teaching creates a positive and supportive learning environment. Teachers who facilitate learning well make students feel valued and supported, thereby increasing their motivation to study harder. The use of verbal and non-verbal rewards, certificates, and constructive positive feedback all contribute to increased extrinsic motivation. For example, verbal praise for effort and achievement makes students feel recognized, while non-verbal rewards like certificates for top scores provide additional impetus for better performance. Positive and constructive feedback helps students understand their strengths and weaknesses, guiding them towards improvement.

Overall, the intrinsic and extrinsic motivations fostered through innovative and interactive learning methods have a profoundly positive impact on students. They not only strive for good grades but also develop their interest and talent in mathematics, ultimately shaping independent, confident, and motivated individuals. Gamification, by incorporating elements like points, levels, badges, and challenges, creates an engaging learning environment that motivates active participation. Its impact on daily assessments is evident through interactive quizzes, team-based competitions, and individual challenges, allowing students to demonstrate understanding dynamically. This game-based assessment system helps students focus and respond constructively to feedback, contributing to improved daily scores. Gamification also cultivates an enthusiastic classroom atmosphere, where challenges and rewards make learning feel like an adventure. Its ability to encourage interactivity and

collaboration, often involving teamwork and problem-solving, enhances social skills and allows students to learn from each other in a supportive context.

Student M.R.P. exemplified this motivational shift, sharing a personal experience where initial poor mathematics grades due to frequent absences in the first semester were significantly improved in the second semester. This change was spurred by observing a peer's success, who achieved a top-three ranking and received a certificate. This experience demonstrates how elements of reward and healthy competition in gamified learning can strongly motivate students to enhance their academic performance.

Implementation of Gamified Learning Innovation

At SMA Negeri 1 Cibitung, the mathematics teacher, Ms. L.F., expresses a strong desire to apply gamification across all taught materials to enhance student activity and enthusiasm. She believes that transforming the learning process into a game increases student engagement and motivation. Gamification, with its elements of points, badges, challenges, and rewards, effectively creates a more appealing and enjoyable learning atmosphere. Students not only learn theory but also apply mathematical concepts in fun and interactive scenarios. Examples like "Snakes and Ladders" with math problems, calculating statistics with dice rolls, "Balance Block," and "Matchstick Patterns" have proven effective in boosting student participation and comprehension.

While Ms. L.F. strives to integrate gamification into all topics, she acknowledges that not all mathematical concepts can be effectively gamified. Limitations in creativity, time, and experience can hinder the design of suitable games for every topic. Forcing all material into a game format could also be counterproductive if not well-designed, potentially disrupting learning. For complex theoretical concepts, Ms. L.F. reverts to conventional teaching methods, such as whiteboard explanations, ensuring these sessions remain engaging through stories, illustrations, and relevant examples. She continuously seeks to develop her creativity in designing games and remains open to new ideas, prioritizing students' deep understanding of the material, regardless of the teaching method. Her ultimate goal is to create a fun and meaningful learning experience that motivates students to achieve optimal results.

The implementation of gamified learning innovation at SMA Negeri 1 Cibitung is not governed by specific school regulations but is encouraged under the *Kurikulum Merdeka*, which promotes interactive and independent classroom management. Ms. L.F. asserts that once a teacher enters the classroom, it becomes their full responsibility to manage the learning process, provided it aligns with curriculum guidelines. Teachers have the autonomy to choose effective methods, with the curriculum primarily dictating time allocation and material completion deadlines. However, activities outside the classroom, such as educational visits, require permission from curriculum authorities to ensure safety and administrative compliance.

The *Kurikulum Merdeka* empowers teachers to innovate and apply creative, interactive teaching methods, allowing them to adapt learning to student needs and characteristics. Ms. L.F. leverages social media (Instagram, Facebook, TikTok) for inspiration to create various games. Specific examples include:

1. **Snakes and Ladders**: A game board with math problems on each square, varying from basic arithmetic to more complex word problems. Groups play, solving problems to advance, with the first group to the end winning.
2. **Dice Statistics**: Students roll dice multiple times to collect data, then calculate mean, median, mode, and range, with additional questions to test understanding.
3. **Balance Block**: A team-building game where groups receive random math problems. Students, in an order determined by attendance dates, stack blocks without dropping

them. If a block falls, the student must solve a problem. If all blocks are stacked successfully, no additional problems are given.

4. **Matchstick Patterns**: Students arrange matchsticks into unique shapes following specific patterns (e.g., triangles, squares), continuing given sequences by adding or removing matchsticks. Correct and quick completion earns extra points.

The Vice Principal of Curriculum, Ms. E.N., supports teachers' freedom to use diverse teaching methods, including game-based learning, as long as learning objectives are met. She emphasizes the importance of well-designed games with clear learning objectives, constructive feedback, and adjustable difficulty levels, cautioning against poor classroom management that could disrupt learning. While game-based methods are not universally applicable, they are frequently shared and adapted among teachers in professional learning communities, particularly within the mathematics department, due to their positive impact on student engagement and learning outcomes.

CONCLUSION

This study investigated the persuasive communication strategies employed by a mathematics teacher at SMA Negeri 1 Cibitung to motivate students through gamified learning innovation, examining the specific strategies, their implementation, and their impact on student engagement and learning outcomes.

The findings reveal that the teacher effectively utilized a multifaceted approach grounded in DeFleur and Ball-Rokeach's persuasive communication framework, encompassing psychodynamic, sociocultural, and meaning-making strategies. The **psychodynamic approach** involved understanding student needs through initial diagnostics and building emotional connections through personal storytelling, fostering a supportive and engaging learning environment. The **sociocultural strategy** leveraged group dynamics and a system of rewards (verbal praise, points, certificates) to promote collaboration, healthy competition, and a sense of appreciation among students, significantly boosting their motivation. The **meaning-making strategy** involved adapting traditional games and creating new game-based activities (e.g., "Snakes and Ladders" with math problems, dice statistics, "Balance Block," matchstick patterns) to connect abstract mathematical concepts with tangible, interactive experiences, making learning more relevant and enjoyable.

The integration of gamification profoundly impacted student motivation and engagement. Students exhibited high levels of enthusiasm, active participation, and improved collaboration in gamified mathematics activities. They expressed significant satisfaction with the game-based learning, finding it challenging, fun, and effective in reducing anxiety towards mathematics. This positive shift in attitude was corroborated by an observed average increase of 20% in daily assessment scores, indicating an enhancement in learning outcomes. The teacher's creative adaptation of games, often inspired by social media, and her pedagogical autonomy within the *Kurikulum Merdeka* framework were crucial enablers of this innovative approach.

In conclusion, the strategic application of persuasive communication, particularly through psychodynamic, sociocultural, and meaning-making lenses, combined with well-designed gamified learning innovations, proved highly effective in enhancing student motivation, fostering collaboration, and improving academic performance in mathematics at SMA Negeri 1 Cibitung. This study underscores the critical role of the teacher's communicative competence and innovative pedagogical practices in creating a dynamic and impactful learning environment that addresses student needs and promotes deeper engagement with challenging subjects.

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