Unlocking Mathematical Success: A Qualitative Case Study on Grade 10 Learners' Challenges and Triumphs with the DAMATH Strategy

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ABSTRACT

Mathematics remains a challenging subject for students, necessitating innovative teaching strategies to enhance engagement and understanding. This study investigates the role of the DAMATH strategy, a game-based learning approach, in boosting academic achievement and cognitive engagement among Grade 10 learners. Using a constructivist theoretical framework, the study explores the issues and concerns students face when implementing DAMATH, their coping mechanisms, and the insights gained. Qualitative data from semi-structured interviews with six purposively selected participants reveal three main challenges: lack of understanding and strategic knowledge, the complexity of mathematical operations, and the pressure of problem-solving to achieve victory. Effective coping strategies identified include consistent practice, focusing on mathematical fundamentals, and collaborative learning. Students reported improvements in cognitive and problem-solving abilities, as well as enhanced mathematical skills, through regular DAMATH gameplay. The study concludes that DAMATH is an effective educational tool that promotes cognitive growth, critical thinking, and mathematical proficiency. Moreover, by integrating DAMATH into the curriculum, educators can enhance students' learning experiences, making mathematics more accessible and engaging. These insights inform future educational strategies and suggest areas for further research on game-based learning and its broader impacts on student motivation and engagement.

Keywords: DAMATH Strategy, Game-based Learning, Mathematical Proficiency

INTRODUCTION

Many students find Mathematics as one of the most difficult subjects in the school that's why teachers must be creative, artistic, and innovative in the different methods and strategies in daily teaching (Ricafrente, 2019). The integration of the DAMATH strategy in educational settings has shown promising results in enhancing both academic achievement and student engagement. DAMATH, a portmanteau of "Dama" and "Mathematics," is a strategic game that combines the principles of checkers with mathematical operations, providing a dynamic and interactive learning experience. This innovative approach aims to make mathematics more engaging and accessible to students, thereby fostering a deeper understanding and improved academic performance. Recent studies have underscored the significant impact of engagement strategies like DAMATH on educational outcomes, reinforcing its potential as a valuable tool in modern pedagogy. However, many students have difficulty grasping mathematical concepts, which results in lower achievement levels and disinterest in the subject.

Internationally, research has been conducted to explore effective strategies for teaching mathematics to students. In the USA, a study explored how different modes of play in educational mathematics games: individual, competitive, and collaborative impact learning, performance, and motivation. The results indicated that

competition increased in-game learning and motivation, while collaboration also enhanced situational interest and enjoyment (Plass, O'Keefe, Homer, Case, Hayward, Stein, & Perlin, 2013). Similarly, a systematic review of digital game-based learning in K-12 mathematics education found that such games significantly improved students' interest, motivation, and learning outcomes (Hussein, Ow, Elaish, & Jensen, 2021).

In the Philippine context, the focus on engagement strategies like DAMATH has also been gaining attraction. For instance, a study that explored the implementation of DAMATH through mobile gaming technology highlighted its potential to enhance numeracy skills and student engagement by making the game more accessible and portable (Ramos, Legaspi, Sabal, & Doroja, 2013). Similarly, an investigation on the role of social goals in academic engagement among Filipino secondary school students, found that certain social goals significantly predicted higher levels of academic engagement (King, McInerney, & Watkins, 2012). These studies collectively suggest that strategies promoting active engagement, such as DAMATH, can significantly enhance educational outcomes in various regions of the Philippines.

Despite the promising outcomes associated with the DAMATH strategy, there remain significant gaps in the current research that warrant further investigation. Notably, most studies on DAMATH and similar engagement strategies have been limited to short-term interventions and small sample sizes, which may not accurately reflect the long-term effectiveness and scalability of these approaches. Additionally, there is a lack of comprehensive qualitative research that delves into the individual experiences and perceptions of students using DAMATH, which is essential for understanding the broader impact of this strategy on diverse student populations. Furthermore, while existing studies have highlighted improvements in student engagement and numeracy skills, there is limited evidence on how DAMATH influences higher-order mathematical thinking and problem-solving abilities. Addressing these gaps is crucial for developing a more holistic understanding of how DAMATH can be effectively integrated into various educational contexts to improve overall mathematics achievement and engagement.

Research Questions

This study aimed to investigate the role of the DAMATH strategy in boosting achievement and engagement among Grade 10 learners. Specifically, this study aimed to answer the following questions:

1. What challenges and concerns do Grade 10 learners encounter when teachers implement the DAMATH strategy in the classroom?

2. What coping mechanisms do Grade 10 learners use to overcome difficulties arising from the implementation of the DAMATH strategy by teachers?

3. What insights can be gained from Grade 10 learners' experiences when teachers implement the DAMATH strategy?

Theoretical Lens

This study was framed using Constructivist Learning Theory. This theory, rooted in the work of Jean Piaget and expanded by scholars such as Lev Vygotsky and Jerome Bruner, posits that learners construct their own understanding and knowledge of the world through experiences and reflecting on those experiences. The DAMATH strategy, which incorporates mathematical concepts into a game format, aligns with this theory by promoting active involvement, collaborative learning, and critical thinking. Constructivist Learning Theory asserts that knowledge is not passively received but actively built by the learner (Piaget, 1972).

Constructivist theory suggests that learners may encounter challenges related to their existing cognitive structures and prior knowledge when introduced to the DAMATH strategy. These challenges can include difficulties in adjusting to the interactive and competitive nature of the game, which requires a shift from traditional rote learning methods to more dynamic, problem-solving approaches. Additionally, students may struggle with the social aspects of the game, such as working collaboratively with peers, which can impact their engagement and proficiency in mathematics (Vygotsky, 1978). Constructivist Learning Theory emphasizes the

role of scaffolding, where more knowledgeable others (teachers or peers) provide support to help learners overcome difficulties. This can involve guided practice, feedback, and encouragement, which are essential for helping students develop effective coping mechanisms (Wood, Bruner, & Ross, 1976).

From a constructivist perspective, the interactive and experiential nature of the DAMATH strategy can lead to a deeper understanding and retention of mathematical concepts. By engaging in meaningful activities that require critical thinking and collaboration, students are likely to experience increased cognitive engagement and academic achievement (Bruner, 1961). The strategy also aligns with the constructivist emphasis on contextualized learning, where learners apply mathematical concepts in real-world scenarios. This contextualization helps students see the relevance of mathematics to their daily lives, further boosting their motivation and engagement (Dewey, 1938).

RESEARCH METHODOLOGY

This section outlines the methodology employed in this case study. It covers various aspects including the research design, participants and sampling design, role of the researcher, role of the teachers, data analysis, the study's trustworthiness, and ethical considerations.

Research Design

In this study, a case study research design was employed to explore the role of the DAMATH strategy in boosting academic achievement and engagement among Grade 10 learners. The case study design was chosen for its strength in providing an in-depth, contextual analysis of complex issues within real-life settings. This approach aligns with the study's objective to gain a detailed understanding of the experiences, challenges, and coping mechanisms of students implementing the DAMATH strategy (Yin, 2018). The case study design is particularly suitable for examining the intricacies of educational interventions like DAMATH, which integrates mathematical learning with gameplay. This method allows researchers to capture the nuanced interactions and dynamics that traditional quantitative methods might overlook. With this specific group of Grade 10 learners, the case study approach provides rich, qualitative insights into how these students engage with and benefit from the DAMATH strategy (Stake, 1995).

The primary research objectives of this study are:

1. To examine the challenges Grade 10 learners encounter in achieving mathematical proficiency with the DAMATH strategy.

2. To identify the methods employed by students to overcome these challenges.

3. To determine the factors contributing to enhanced mathematical achievement and cognitive engagement among students using the DAMATH strategy.

Participants and Sampling Design

The study involved purposeful sampling, selecting six participants who met predefined criteria relevant to the research questions. This deliberate selection process ensures that the participants have direct experience with the DAMATH strategy, thereby providing meaningful and relevant data. The population of the study consisted of Grade 10 learners from XYZ High School who had been using the DAMATH strategy in their mathematics classes for at least one semester. The use of a small, focused sample is a hallmark of case study research, as it enables a deeper investigation into the particularities of each case (Patton, 2002).

Role of the Researcher

In a case study design, the researchers play a critical role as both an observer and an interpreter of the data. In this study, the researchers engaged closely with participants, conducting semi-structured interviews to gather detailed, first-hand accounts of their experiences. The role of the researchers extended beyond mere data collection to include active listening, probing for deeper understanding, and maintaining an ethical and empathetic stance throughout the study (Merriam & Tisdell, 2016).

Role of the Teachers

Teachers played a pivotal role in the implementation and success of the DAMATH strategy. They facilitated the integration of DAMATH into the curriculum by incorporating it into lesson plans and ensuring its alignment with learning objectives. Teachers provided guidance and support to students as they engaged with the DAMATH strategy, helping them understand the rules and strategies of the game. They monitored student progress and provided feedback to help students improve their mathematical skills within the DAMATH framework. Additionally, teachers created a supportive and encouraging learning environment that fostered student engagement and collaboration. Their observations of student interactions and progress were also valuable in complementing the data gathered from student interviews, providing a comprehensive view of the DAMATH strategy's impact.

Data Collection and Instrumentation

Semi-structured interviews were the primary data collection method, chosen for their flexibility and depth. This method allows participants to share their experiences in their own words, providing rich, qualitative data. Open-ended questions facilitated a thorough exploration of the obstacles, strategies, and factors affecting mathematical achievement and cognitive engagement. The use of audio recordings and detailed transcriptions ensured that the data was captured accurately and comprehensively (Kvale & Brinkmann, 2009).

Data Analysis

The study commenced with a meticulous participant recruitment process based on specific criteria. Researchers conducted interviews with all six eligible participants, recording the conversations with an audio recorder and transcribing the data. The data sources comprised responses that investigated the challenges Grade 10 learners encounter in achieving mathematical proficiency with the DAMATH strategy, the methods to overcome these challenges, and the factors contributing to enhanced mathematical achievement and cognitive engagement. The analysis of the collected data involved meticulous coding and thematic analysis, consistent with the qualitative nature of case study research. The researchers identified patterns and themes that emerged from the participant's responses, providing a detailed understanding of their experiences with the DAMATH strategy. This analytical process highlighted the common challenges faced by students, the strategies they employed to overcome these challenges, and the elements of the DAMATH strategy that contributed to their academic success and engagement (Braun & Clarke, 2006).

Trustworthiness and Ethical Considerations

Ensuring the trustworthiness of the study involved several strategies, including member checking, triangulation of data sources, and maintaining a reflective journal by the researchers. Ethical considerations were paramount, with confidentiality and informed consent being strictly upheld throughout the research process (Lincoln & Guba, 1985).

RESULTS

This section details the results of the qualitative analysis conducted on the answers to the research questions. The findings are organized according to the emergent themes, sub-themes, core concepts, and their categorization.

Thematic Analysis
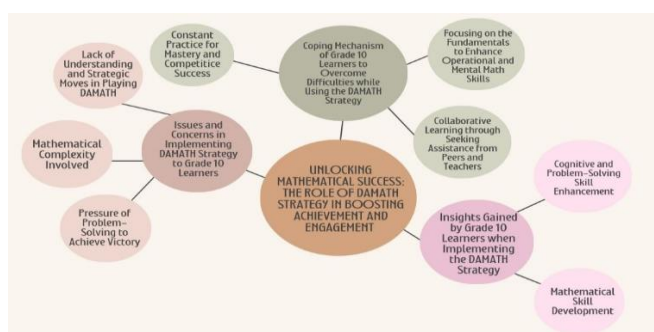
This diagram illustrates the various factors impacting the effectiveness of the DAMATH strategy for Grade 10 learners. It highlights the challenges faced, such as mathematical complexity and lack of understanding, and emphasizes coping mechanisms like focusing on fundamentals and collaborative learning. The diagram also underscores the benefits of the strategy, including cognitive enhancement and skill development, and the importance of continuous practice for mastery and competitive success.

Issues and Concerns Grade 10 Learners faced when implementing the DAMATH Strategy

Table 1. Themes and Core Statement on The Issues and Concerns Grade 10 Learners faced when implementing the DAMATH Strategy

Themes	Core Statements
Lack of Understanding and Strategic Moves in Playing DAMATH	*S1: "Since it's my first time to play, I am not familiar with the moves in playing DAMATH."* *S2: "I don't know how to move the chips in order to win."*
Mathematical Complexity Involved	*S3: "Maglisod ko ug solve ilabi na kung nay time limit especially sa multiplication ug division." ("I have difficulty solving, especially when there's a time limit, particularly with multiplication and division.")* *S1: "Lisod ang polynomial DAMATH kay nay mga variables ug exponents." ("Polynomial DAMATH is difficult because it has variables and exponents.")*
Pressure of Problem-Solving to Achieve Victory	*S1: Challenging siya because you need to win."* *S3: "It was a challenged to solve the given problem in order to win while you are playing."*

Lack of Understanding and Strategic Moves in Playing DAMATH

Students encounter significant hurdles when first learning to play DAMATH, primarily due to unfamiliarity with the game's rules and strategies. As one student noted, "Since it's my first time to play, I am not familiar with the moves in playing DAMATH," this indicates a foundational challenge in grasping the basic mechanics of the game. Another student expressed, "I don't know how to move the chips in order to win," highlighting the difficulty in developing strategic thinking necessary for effective gameplay. This theme underscores the need for comprehensive introductory lessons and practice sessions to help new players build confidence and competence.

Addressing these initial challenges requires a structured approach, as highlighted by Kaldarova et al. (2023), who emphasize the importance of clear instructions and structured introductory sessions in game-based learning environments. Xu et al. (2023) agree, noting that strategic thinking is a higher-order cognitive skill that develops through consistent practice and targeted instruction. Regular practice, as Nadeem et al. (2023) found, enhances student engagement and learning outcomes, while Dahalan et al. (2023) stress the critical role of active educator involvement in maintaining student motivation. Muhammad et al. (2023) further support the need for comprehensive introductory lessons to reduce initial anxiety and encourage student engagement. By implementing these strategies, educators can significantly enhance students' confidence and competence in playing DAMATH effectively.

Mathematical Complexity Involved

DAMATH involves various mathematical operations that can pose a significant challenge to players. One student remarked, "Maglisod ko ug solve ilabi na kung nay time limit especially sa multiplication ug division" ("I have difficulty solving, especially when there's a time limit, particularly with multiplication and division."),

emphasizing the added pressure of time constraints on their ability to perform basic arithmetic operations. Additionally, another student stated, "Lisod ang polynomial DAMATH kay nay mga variables ug exponents" ("Polynomial DAMATH is difficult because it has variables and exponents."), pointing to the complexity introduced by higher-level mathematical concepts. This theme highlights the importance of solidifying students' foundational math skills and providing support for more advanced topics.

To address these challenges, it is crucial to incorporate targeted instructional strategies that focus on both foundational and advanced mathematical skills. As Hui and Mahmud (2023) suggest, integrating game-based learning with a focus on cognitive and affective domains can significantly improve students' mathematical understanding and engagement. Similarly, Camacho-Sánchez et al. (2023) found that gamification in educational settings not only boosts motivation but also enhances academic performance by making complex subjects more accessible. Therefore, educators should consider incorporating additional practice sessions and providing scaffolding for complex mathematical concepts to help students navigate the intricacies of DAMATH.

The Pressure of Problem-Solving to Achieve Victory

The competitive nature of DAMATH adds another layer of difficulty, where the pressure to solve problems correctly and quickly can be overwhelming. One student said, "Challenging siya because you need to win," underscoring the competitive aspect of the game that drives the need for proficiency. Another echoed this sentiment, stating, "It was a challenge to solve the given problem in order to win while you are playing." The pressure to perform well in a competitive setting can significantly impact a student's ability to think clearly and make strategic decisions. This suggests the need for balancing competitive play with educational support to ensure students are not discouraged by the pressure to win. Nadeem et al. (2023) emphasize the importance of creating a supportive learning environment that mitigates stress and promotes positive competition. Additionally, Hui and Mahmud (2023) highlight that providing constructive feedback and focusing on skill development over competition can help students manage performance pressure effectively.

Coping Mechanisms of Grade 10 Learners to Overcome Difficulties while Using the DAMATH Strategy

Table 2. Themes and Core Statement on The Coping Mechanisms of Grade 10 Learners to Overcome Difficulties while Using the DAMATH Strategy

Themes	Core Statements
Consistent Practice for Mastery and Competitive Success	S1: "Sige lang dyud ug practice hangtud ma-improve ang skills sa DAMATH." ("Just keep practicing until your DAMATH skills improve.") S2: "Kung makadaug, challenge other players and seniors. So, practice." ("If you win, challenge other players and seniors. So, practice.")
Focusing on the Fundamentals to Enhance Operational and Mental Math Skills	S1: "Study sa una unsaon pag apply sa mga operations." ("First, study how to apply the operations." S3: "Study first the concepts in mathematics na kailangan sa game." ("Study first the concepts in mathematics needed for the game.") S5: "Study always para ma-improve akong mental math." ("Always study to improve my mental math.")
Collaborative Learning through Seeking Assistance from Peers and Teachers	S2: "Naay times na maglisod ko mao tong mag-ask ko sa ilaha ug help." ("There are times when I struggle, so I ask them for help.") S3: "I seek help from more experienced classmates and teachers and also offer help whenever I can." ("I seek help from more experienced classmates and teachers and also offer help whenever I can.")

Consistent Practice for Mastery and Competitive Success

Students emphasize the importance of consistent practice in mastering DAMATH and achieving competitive success. As one student noted, "Sige lang dyud ug practice hangtud ma-improve ang skills sa DAMATH" ("Just keep practicing until your DAMATH skills improve."). This indicates that continuous practice is crucial for skill development. Another student expressed, "Kung makadaug, challenge other players and seniors. So, practice" ("If you win, challenge other players and seniors. So, practice."), highlighting the connection between practice and the ability to compete successfully. This theme underscores the need for persistent effort and repetition to build confidence and competence in DAMATH.

Consistent practice is essential for developing proficiency in any skill, and DAMATH is no exception. Regular practice sessions help students internalize game mechanics and enhance their strategic thinking abilities. According to Nadeem et al. (2023), continuous practice in a game-based learning environment significantly improves student engagement and skill acquisition. Furthermore, Hui and Mahmud (2023) found that consistent practice combined with constructive feedback leads to sustained improvement in students' cognitive and affective skills. By fostering a culture of regular practice and providing opportunities for students to challenge each other, educators can help students achieve mastery and competitive success in DAMATH.

Focusing on the Fundamentals to Enhance Operational and Mental Math Skills

Mastering DAMATH requires a solid understanding of mathematical fundamentals. One student remarked, "Study sa una unsaon pag apply sa mga operations" ("First, study how to apply the operations."), emphasizing the importance of understanding basic operations. Another student stated, "Study first the concepts in mathematics na kailangan sa game" ("Study first the concepts in mathematics needed for the game."), pointing to the necessity of grasping essential mathematical principles. Additionally, a third student mentioned, "Study always para ma-improve akong mental math" ("Always study to improve my mental math."), highlighting the importance of continuous learning to enhance mental calculation skills. This theme highlights the critical role of a strong mathematical foundation and ongoing study in succeeding at DAMATH.

A strong grasp of fundamental mathematical concepts is crucial for success in DAMATH. Regular review and practice of these basics help students to apply operations effectively during gameplay. Hui and Mahmud (2023) stress the significance of a solid mathematical foundation in enhancing students' cognitive skills, particularly in game-based learning environments. Additionally, Camacho-Sánchez et al. (2023) highlight the positive impact of continuous study and practice on students' ability to perform mental calculations quickly and accurately. Through focusing on the fundamentals and encouraging consistent study, educators can help students build the necessary skills to excel in DAMATH.

Collaborative Learning through Seeking Assistance from Peers and Teachers

Students recognize the value of seeking help and collaborating with peers and teachers to overcome challenges in DAMATH. One student noted, "Naay times na maglisod ko mao tong mag-ask ko sa ilaha ug help" ("There are times when I struggle, so I ask them for help."), indicating the need for support when facing difficulties. Another student shared, "I seek help from more experienced classmates and teachers and also offer help whenever I can" ("I seek help from more experienced classmates and teachers and also offer help whenever I can."), emphasizing the importance of both seeking and providing assistance. This theme suggests that a collaborative approach, where students learn from and support each other, is essential for overcoming challenges and achieving success in DAMATH.

Collaborative learning is a powerful tool in educational settings, fostering both academic and social development. Ma and Chen (2024) highlight the effectiveness of peer assistance systems in promoting comprehensive development among students, enhancing not only their academic skills but also their social interaction and leadership abilities. Similarly, Darvishi et al. (2022) demonstrate that structured peer review and feedback systems, supported by training and self-monitoring, significantly improve the quality of student interactions and learning outcomes. By fostering an environment where students can seek help from peers and teachers, educators can create a supportive and collaborative learning atmosphere that encourages continuous

improvement and success in DAMATH.

Insights Gained When Implementing the DAMATH Strategy

Table 3. Themes and Core Statement on The Insights Gained by Grade 10 Learners When Implementing the DAMATH Strategy

Themes	Core Statements
Cognitive and Problem-Solving Skill Enhancement	S2: *"Duha man gud mo magdula and ma-stimulate imung brain."* ("Two people are playing, and it stimulates your brain.") S6: *"Mas na-improve akong solving skills tungod kailangan ko magfocus sa dula and sa akong mga moves."* ("My solving skills have improved because I need to focus on the game and my moves.") S1: *"Mas na-improve akong focus and advance thinking para one step ahead ko sa akong kalaban."* ("My focus and advanced thinking have improved so I can stay one step ahead of my opponent.")
Mathematical Skill Development	S3: *"Kung magdula ko mas ma-improve akong mental math."* ("When I play, my mental math improves.") S4: *"Ang DAMATH kay nakahelp sa akoa para mas ma-improve akong skills sa mathematical operations."* ("DAMATH has helped me improve my skills in mathematical operations.")

Cognitive and Problem-Solving Skill Enhancement

Students report significant improvements in their cognitive and problem-solving abilities through playing DAMATH. One student noted, "Duha man gud mo magdula and ma-stimulate imung brain." ("Two people are playing, and it stimulates your brain."), emphasizing the mental stimulation gained from interactive play. Another student stated, "Mas na-improve akong solving skills tungod kailangan ko magfocus sa dula and sa akong mga moves." ("My solving skills have improved because I need to focus on the game and my moves."), highlighting how the game enhances their focus and problem-solving skills. Additionally, a student remarked, "Mas na-improve akong focus and advance thinking para one step ahead ko sa akong kalaban." ("My focus and advanced thinking have improved so I can stay one step ahead of my opponent."), which indicates that DAMATH promotes strategic thinking and the ability to anticipate opponents' moves. This theme underscores the importance of DAMATH in fostering cognitive growth and enhancing critical thinking and problem-solving skills.

Engaging in game-based learning, such as DAMATH, significantly contributes to the enhancement of cognitive and problem-solving skills. Soluade et al. (2022) found that digital games effectively develop problem-solving abilities and values such as persistence and critical thinking. Similarly, Yılmaz and Griffiths (2023) reviewed various studies and concluded that both video and traditional games significantly improve children's social problem-solving skills. By incorporating games like DAMATH into the curriculum, educators can provide students with stimulating and interactive ways to develop their cognitive skills and problem-solving abilities, ensuring a well-rounded educational experience.

Mathematical Skill Development

Playing DAMATH significantly boosts students' mathematical skills. One student mentioned, "Kung magdula ko mas ma-improve akong mental math." ("When I play, my mental math improves."), pointing out the improvement in mental arithmetic through regular gameplay. Another student shared, "Ang DAMATH kay nakahelp sa akoa para mas ma-improve akong skills sa mathematical operations." ("DAMATH has helped me improve my skills in mathematical operations."), emphasizing how DAMATH directly enhances their proficiency in mathematical concepts. This theme highlights DAMATH's effectiveness in strengthening

mathematical skills, making it a valuable educational tool for reinforcing classroom learning.

Engaging in educational games like DAMATH can significantly enhance students' mathematical abilities. Badriyah (2019) demonstrated that traditional games incorporating mathematical logic, effectively improve motor skills and mathematical reasoning in young children. Additionally, Hui and Mahmud (2023) found that game-based learning positively impacts both the cognitive and affective domains of students, improving their knowledge and mathematical skills. Through integrating games like DAMATH into educational practices, educators can create engaging and effective learning environments that enhance students' mathematical proficiency and overall academic performance.

CONCLUSIONS

The findings from the qualitative analysis of Grade 10 learners' experiences with the DAMATH strategy reveal critical insights into the challenges and benefits associated with this educational tool. Three main themes emerged regarding the issues and concerns faced by students: a lack of understanding and strategic knowledge, the complexity of mathematical operations, and the pressure of problem-solving to achieve victory. These challenges underscore the necessity for comprehensive introductory lessons, ongoing practice sessions, and a supportive learning environment that balances competitive play with educational support. Addressing these areas can help new players build confidence, competence, and resilience in their DAMATH gameplay.

In coping with these challenges, students identified several effective strategies. Consistent practice was highlighted as crucial for mastering DAMATH and achieving competitive success, with students noting the importance of persistent effort and repetition. Focusing on the fundamentals, such as understanding basic operations and essential mathematical principles, was also deemed vital for success. Additionally, collaborative learning through seeking assistance from peers and teachers played a significant role in overcoming difficulties. This approach emphasizes the value of a supportive and interactive learning environment where students can learn from and help each other.

The insights gained from implementing the DAMATH strategy also point to substantial cognitive and mathematical skill development. Students reported improvements in mental stimulation, focus, strategic thinking, and problem-solving skills through regular gameplay. DAMATH was found to enhance mental arithmetic and proficiency in mathematical operations, making it an effective educational tool for reinforcing classroom learning. These benefits highlight the potential of DAMATH to promote cognitive growth and enhance critical thinking and mathematical skills among students, thereby enriching their overall educational experience.

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