

AUTUMN 2026

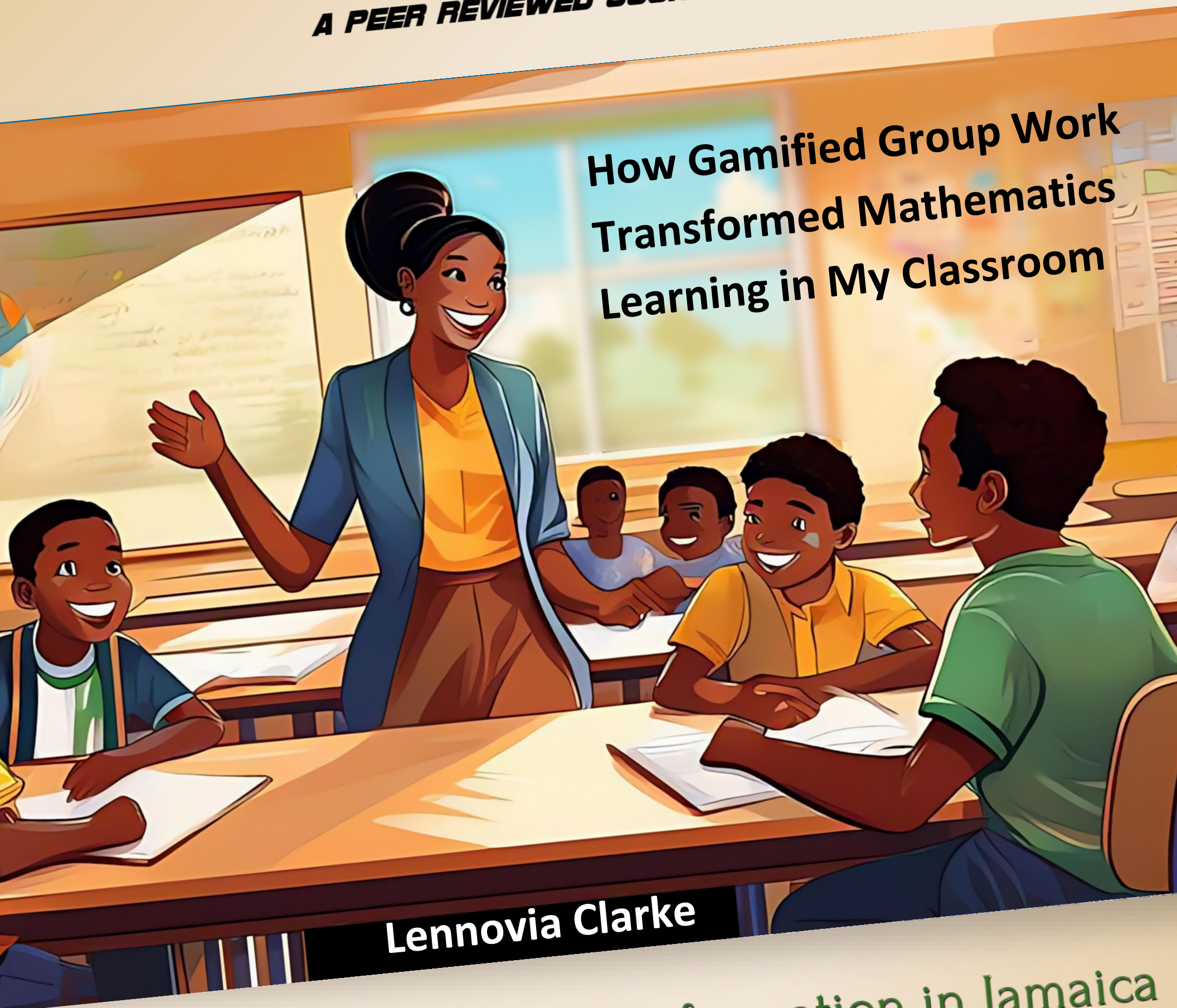
LEGACY



TRANSFORMATION IN ACTION

A PEER REVIEWED JOURNAL

How Gamified Group Work
Transformed Mathematics
Learning in My Classroom



Lennovia Clarke

Advancing Educational Transformation in Jamaica



The Worthy Educator
theworthyeducator.com

How Gamified Group Work Transformed Mathematics Learning in My Classroom

Lennovia Clarke
Secondary Mathematics Educator
Ministry of Education Schools



Introduction

I still remember walking into my Grade 10 mathematics class one Tuesday morning, feeling frustrated and uncertain as I prepared for a double session. Of all my Grade 10 classes, this was by far the lowest-performing group. No matter how carefully I planned my lessons or how clearly I explained mathematical concepts, many students remained disengaged. They rarely volunteered to answer questions, avoided coming to the board, and even when they successfully completed activities at their desks, they lacked the confidence to share their thinking with the class. Whenever lessons required mathematical reasoning or problem-solving, the classroom often fell into an uncomfortable silence.

One day, after yet another lesson in which participation was almost nonexistent, I decided to ask my students why they seemed so disconnected from mathematics. Their responses were remarkably honest. One student looked at me and said, “Miss, maths just *anuh fi mi*” (Miss, mathematics just isn't for me). Before I could respond, another student added, “*Anuh fi mi needa*” (It's not for me either). Those few words stayed with me. It became clear that the greatest challenge was not simply that my students struggled with mathematics; many had already convinced themselves that they were incapable of learning it. What they had developed was a powerful mental barrier that prevented them from believing they could succeed.

As I reflected on their responses, I began paying closer attention to their behaviour during lessons. It was seen where students refused to attempt answers publicly, even when they had completed the work correctly. Rather than trusting their own abilities, they waited for one particular classmate to finish before copying his or her approach. There were days I felt as though I was teaching a class of one or two while the remaining students had mentally checked out. Although I knew my students possessed different abilities, I also knew they were far from incapable. They simply lacked confidence, motivation, and a genuine belief that their success in mathematics was possible. This experience forced me to reflect critically on my own teaching practice and methods. If traditional approaches were failing to engage these learners, then I needed to rethink how mathematics was being experienced in my classroom. As educators, we cannot continue relying on a “one-size-fits-all” approach when today's learners require opportunities to collaborate, participate actively, and enjoy the learning process. We must embrace our role as facilitators by creating environments where students feel safe to take risks, make mistakes, and develop confidence in their mathematical reasoning.

Being determined to change the culture of my classroom, I introduced gamified group work aiming to transform mathematics from a subject my students fear into one that they were willing to engage with. This article therefore reflects on that journey and explores how gamified group work transformed mathematics learning in my classroom while reaffirming my belief that every child can learn mathematics when given the right opportunities to succeed.

Exploring Gamified Group Work

In my classroom, gamified group work means that students work in teams to solve mathematical challenges, earn points, explain their reasoning, and encourage each other throughout the learning process. So, instead of working individually, students collaborate to complete mathematical tasks while engaging in friendly competition. I incorporate game elements such as points, rewards, timed challenges, and team competitions to make learning mathematics more interactive and enjoyable. In addition to this, the groups I create are not random but are carefully planned based on the lesson objectives and the needs of my students.

As an agent of change, I endorse the belief that it is important for us as educators to understand the diverse abilities within our classrooms, as this helps us to create groups that promote collaboration and meaningful participation. Developing learner profiles has helped me better understand my students' strengths, areas for improvement, and learning preferences, allowing me to group them more effectively. With all said, while gamified group work can be incorporated into any mathematics classroom, the games and activities selected should always be appropriate for the learners and aligned with the lesson objectives. Thoughtful planning ensures that the strategy remains purposeful and supports students in engaging meaningfully with mathematical concepts.

Benefits of Gamified Group Work

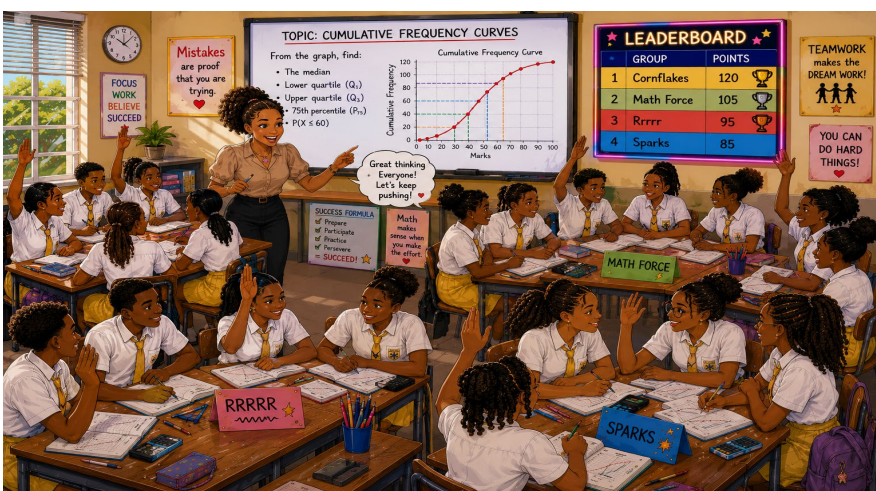
One of the most memorable lessons I facilitated using gamified group work was with my Grade 10 class during a lesson on cumulative frequency curves. After students had explored the concept, I designed a team challenge where each group was given a cumulative frequency graph along with a series of questions that required them to interpret the graph to determine values such as the median, quartiles, percentiles, probabilities, and other information that could be obtained from the graph. Groups earned points for both accuracy and teamwork, and within minutes, the classroom was filled with excitement.

What stood out to me was not simply that students answered the questions correctly, but how eager they were to participate. Students confidently rushed to draw guide lines on the graphs, debated possible solutions with their teammates, and enthusiastically raised their hands to explain their reasoning. What impressed me even more was how effectively they drew on their prior knowledge. Their responses were rarely incorrect, and I realized that concepts they had previously struggled to recall were now being applied naturally and confidently. These were the very same students who, only months before, avoided answering questions openly, particularly when mathematical reasoning was required. During the game, however, mistakes became part of the learning process rather than something to fear. Students willingly took risks, shared ideas, defended their answers, and learnt from each other without the fear of being wrong. For the first time, I looked across the classroom and saw almost every hand in the air. At that moment, I felt as though my mission as their teacher had been accomplished. I even joked to myself that I deserved a medal for getting this particular class so actively involved in mathematics.

Honestly, it felt like one of those lessons you hope an external assessor or appraiser walks in to observe because everything was unfolding just as I had envisioned. The most rewarding moment came when the team with the fewest points refused to give up. Instead of losing interest, as they would have done in previous lessons, they enthusiastically shouted, "No bonus points naa run, Miss?" (Miss, aren't there any bonus points?). They wanted more questions - not because they had to, but because they genuinely wanted another opportunity to improve their score. That response alone showed me how much their attitude towards mathematics had changed. Rather than avoiding challenging questions, they were now actively asking for more opportunities to solve them. It was at that moment that I realized the game had shifted their focus from fearing mistakes to embracing challenges. These students literally had me questioning myself after the lesson. How could it be?

Experiences like this have reinforced my belief that gamified group work is a powerful approach to mathematics teaching and learning, particularly for students who struggle with confidence and engagement. Grounded in the principles of social constructivism, this approach transforms the classroom from a space where students passively receive information into one where they actively construct knowledge through collaboration, discussion, and problem-solving. The game elements used, such as points and rewards, provide immediate feedback that keeps students motivated and focused on achieving shared goals. At the same time, working collaboratively allows students to learn from each other, strengthen their critical thinking skills, and develop greater confidence in communicating mathematical ideas. I must reiterate that this experience truly proves that gamified group work does not only increase student engagement but has also created a classroom environment where students are more willing to participate, persevere through challenges, and believe in their ability to succeed in mathematics.

Impact on Student Achievement



As I continued using gamified group work with my grade 10 students throughout the remainder of the school term, I began noticing meaningful changes in my students' achievement and overall attitude towards mathematics. The friendly competition quickly became something they looked forward to, with each group eagerly anticipating opportunities to earn points and improve their standing. What started as a strategy to increase engagement gradually evolved into a classroom culture where students were motivated to participate, collaborate, and challenge themselves.

One of the most noticeable changes was students' willingness to communicate their mathematical thinking. During whole-class discussions, students who had once avoided answering questions became increasingly confident in explaining their reasoning and justifying their solutions. Classroom discussions became richer, with students questioning one another's methods, offering alternative strategies, and celebrating each other's successes. Homework completion also improved, which I truly appreciated, as many students wanted to contribute positively to their team's performance during subsequent lessons.

Despite that improvement did not happen overnight, I was encouraged by the progress my students made over the term. By the end of the summer term, seven students earned scores above 50% in mathematics, compared to only two students in the Christmas term. While this may appear to be a minimal improvement, it represented a significant achievement for this particular class. Knowing where these students had started, I appreciated the effort, determination, and confidence they had developed along the way. Their success reminded me that improvement should not always be measured by dramatic increases in grades but also by the progress students make from their own starting points.

Term	Average Outcomes	Performance Range (%)			
		80-100	60-79	50-59	30-49
CHRISTMAS	38.6	0	1	1	24
SUMMER	41.8	0	2	5	17

I also noticed that the games strengthened students' retention of previously taught concepts. They were able to activate prior knowledge more readily and apply it when solving new mathematical problems, making lessons more productive and allowing me to assess their understanding continuously through observation and discussion. This ongoing formative assessment helped me identify misconceptions early and adjust my teaching to meet students' needs.

Perhaps the greatest achievement, however, was the transformation in how my students viewed mathematics. The subject gradually became less intimidating and more enjoyable. The fear of making mistakes diminished, mathematics anxiety was reduced, and students became more willing to take risks and persevere with challenging problems. Watching a class that had once viewed mathematics as “not for them” become actively engaged in learning reaffirmed my belief that when students are provided with meaningful opportunities to collaborate, compete positively, and experience success, achievement naturally follows.

Implementing Gamified Group Work in the Mathematics Classroom

Reflecting on my experience, I have learnt several lessons about successfully implementing gamified group work in the mathematics classroom. The first is that every game must have a clear learning purpose. Before introducing any activity, I identify the mathematical concepts and skills that students are expected to master and then design the game around those objectives. I have found that when games are intentionally aligned with the lesson outcomes, students remain focused on learning rather than becoming distracted by the competition.

Another lesson I learnt early was the importance of assigning roles within each group. In my classroom, every group had a designated leader who was responsible for encouraging participation, keeping the team organized, and motivating members to continue learning beyond the classroom by forming study groups. Giving students responsibilities created a greater sense of accountability and ensured that each member contributed to solving mathematical problems and participating in mathematical discussions.

I also learnt that my role shifted from being the primary source of information to becoming a facilitator of learning. As students worked through the challenges, I moved from group to group, asking probing questions, addressing misconceptions, and providing immediate feedback. These interactions helped students refine their mathematical thinking while allowing me to assess their understanding continuously throughout the lesson.

Finally, I found that the reward system should recognize more than simply getting the correct answer. While points encouraged healthy competition, I intentionally rewarded teamwork, mathematical reasoning, effort, perseverance, and improvement. This helped create a supportive classroom environment where students understood that learning mathematics was about growth rather than simply winning.

Although gamified group work transformed the atmosphere in my classroom, it also revealed an important challenge. While many students demonstrated a strong understanding of mathematical concepts during group activities, some struggled to demonstrate that same level of understanding when completing individual tasks. It was almost as if the confidence they displayed while working with their peers disappeared once they were required to work independently. This experience reminded me that creating an engaging classroom environment is only one part of improving mathematics learning. While I was encouraged by the improvements in participation and achievement, I wanted to see even greater gains reflected in students' independent

performance. This has inspired me to continue refining my practice and explore strategies that better support the transfer of collaborative learning to individual mathematical success. It also presents an area for further reflection and research as I continue striving to improve mathematics teaching and learning in my classroom.

Gamified Group Work in a Mathematics Lesson Sample

One of my favourite gamified mathematics lessons is an addition of integers Bingo activity that I implemented with one of my Grade 7 classes early in my teaching career. I have chosen to share this lesson because it demonstrates that gamified group work can be just as effective with students transitioning from primary to secondary school as it is with older learners. At this stage, many students are eager to participate, making it an ideal opportunity to establish a positive attitude towards mathematics from the beginning.

For this activity, I created Bingo cards with sixteen randomly placed answers and prepared a bag containing addition of integers questions. As each question was drawn, students worked collaboratively within their groups to solve the problem. If the correct answer appeared on their Bingo card, they placed a counter on the corresponding square. The classroom quickly became filled with excitement as students discussed solutions, checked one another's work, and eagerly anticipated the next question.

One moment from this lesson has remained with me throughout my teaching career. The students became so engaged in the activity that we continued playing into the lunch period without even realizing it. Rather than rushing to leave the classroom, they were asking for "just one more question." That lesson reminded me that when mathematics is presented in an engaging and collaborative way, students become genuinely invested in their learning. The following lesson outline illustrates how gamified group work was used to teach the addition of integers.

Topic: Addition of Integers (Grade 7)

Learning Objective: By the end of this lesson, students will be able to add integers accurately while collaborating with their peers to solve problems and explain their reasoning.

Step 1: Introduce the concept of adding integers through hands-on group activities using manipulatives or visual models. Encourage students to explore how positive and negative integers interact while discussing their observations with group members. Facilitate discussions that help students discover patterns and relationships.

Step 2: Distribute the Bingo cards and explain the rules of the game. Draw one question at a time from the prepared bag, allowing groups to solve each problem collaboratively. Students place a counter on the corresponding answer if it appears on their card. Award points for correct answers, teamwork, mathematical reasoning, and effective communication. Bonus points may be given to groups that clearly justify their solutions or demonstrate multiple solution strategies.

Step 3: Invite each group to reflect on the strategies they used, any challenges they encountered, and how working together helped them solve the problems. Encourage students to share their mathematical reasoning rather than simply stating answers.

Step 4: Provide immediate feedback, address misconceptions, and recognize groups for their effort, collaboration, participation, and problem-solving skills. Conclude the lesson by reinforcing the key concepts and celebrating the value of teamwork in learning mathematics.



Reflections from My Classroom

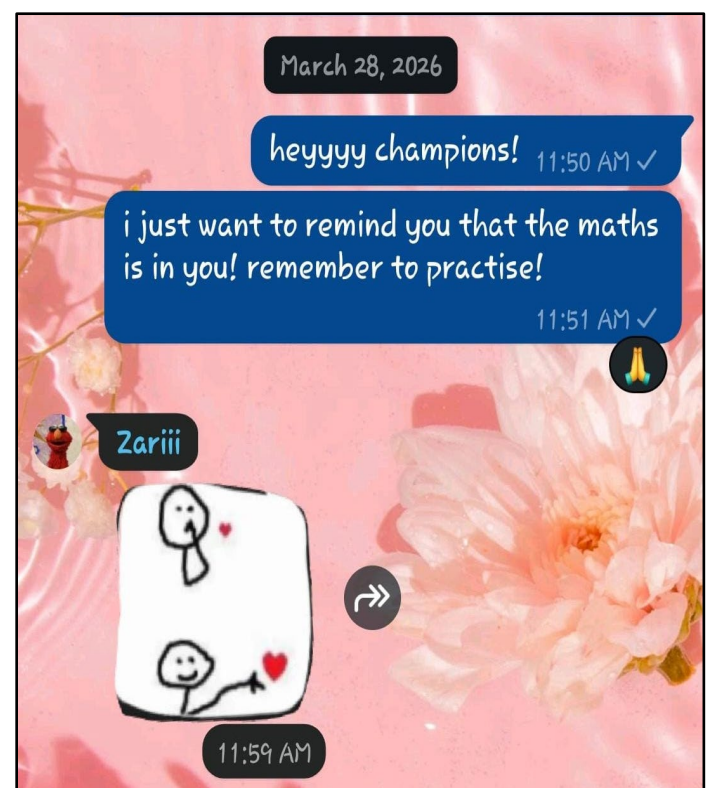
Looking back on this journey, I have come to appreciate that gamified group work is far more than simply adding games to mathematics lessons. It is a carefully planned instructional strategy that, when implemented with a clear purpose, has the potential to transform students' attitudes, participation, and confidence in mathematics. My advice to any educator considering this approach is to begin with the learning objective, not the game. Ask yourself whether the activity is appropriate for your learners, what specific aspect of learning you hope to improve, and how the game will support students in achieving that goal. Purposeful planning will always yield greater results than introducing games simply for enjoyment.

At the same time, I encourage us educators to think beyond the excitement created during the lesson. One of the greatest lessons I learnt was that students may demonstrate strong understanding and confidence within the collaborative setting but still require support to transfer that learning to independent tasks and formal assessments. This challenged me to think more critically about how I could sustain the gains made during classroom activities and better prepare students to apply their knowledge individually. After all, our goal is not simply to create lively mathematics classrooms but to improve students' overall mathematical achievement.

Another important lesson I learnt is that mathematics learning should not end when students leave the classroom. Mathematics is a practical subject that requires consistent practice, and as educators, we should provide opportunities for students to continue engaging with mathematical concepts beyond school hours. Digital platforms such as *Kahoot!*, *Wayground* and similar game-based learning tools can be used to help reinforce concepts while maintaining the motivation and enthusiasm of students outside the learning environment as their features promote independent learning.

Reflecting on my own experience, I often wish I had introduced gamified group work much earlier with my Grade 10 class. Although I implemented the strategy for only the final few months of the school year, I still witnessed meaningful improvements in participation, confidence, and achievement. Looking back, I cannot help but wonder how much greater those gains might have been had I begun at the start of the academic year. This concretizes that if gamified group work is strategically planned as part of a broader programme of intervention, it has the potential to transform not only classroom engagement but also students' confidence, resilience, and achievement in mathematics. More importantly, it reminds us that with the right opportunities, support, and belief, every child can indeed learn mathematics.

With all said, I encourage us educators to remain reflective and flexible as twenty-first-century learners are dynamic, and no single strategy will ever meet every need. We must continually evaluate our practice, celebrate the progress our students make, and refine our approaches when challenges arise.



Lennoxia Clarke is a mathematics educator with four years of experience teaching at the secondary level in Jamaica. She holds a Bachelor of Education and a Master of Education in Mathematics Education and was the Valedictorian of The Mico University College's 2022 graduating class. Passionate about student-centred learning, she is committed to making mathematics engaging, meaningful, and accessible for all learners through innovative and collaborative teaching approaches. In 2024, she received the Governor-General's Achievement Award for the parish of St. Ann in recognition of her academic excellence, leadership, and service. 

Legacy is the official journal of The Worthy Educator, elevating the good work being done by leaders in education who are working to change the narrative on the profession and actively plan for impact that transforms its future to serve the needs of a diverse, decentralized, global society that is inclusive, equitable and open to all people as next generations adapt, evolve and contribute by solving problems and creating solutions that meet the needs of a world we have yet to envision.

Submissions are accepted from educators implementing new and innovative approaches to teaching and learning, as well as education organizations sharing their work in dedicated showcase editions, and are planned and released on a rolling basis. Learn more, including our submission guidelines for prospective contributors, at theworthyeducator.com/journal.