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TEACHERS' OPINION ABOUT THE EFFECTIVENESS OF A GEOMETRY INTERVENTION PROGRAM INTEGRATING EMOTIONAL SUPPORT

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Abstract: This study examines the qualitative outcomes of a geometry intervention program implemented in 2023 in an Israeli elementary school for fifth- and sixth-grade students. The program was unique in its use of emotional support strategies in geometry instruction to improve students' mathematics achievement, reduce math anxiety, and increase their self-efficacy. To assess its effectiveness, the study collected qualitative data through interviews with two teachers who implemented the program. These interviews provided insight from the teachers' perspectives on both students' progress and teachers' experience. Results revealed significant academic and emotional improvements among students, including greater understanding of geometry, reduced math anxiety, and increased self-efficacy. At the same time, teachers also experienced personal and professional growth, feeling more confident and empowered while delivering the program.

Key words: Mathematical achievement, self-efficacy, math anxiety, emotional tools, qualitative research, case study

1. Introduction

Mathematics education, and geometry in particular, poses significant challenges for many students, especially in the secondary school years. While these challenges are often approached through academic reinforcement alone, there is a growing awareness of the role of emotional factors in students' ability to engage and succeed in mathematics. Research has consistently shown that emotional experience, such as math anxiety and low self-efficacy, is closely linked to poor academic performance and avoidance of mathematical tasks (Ashcraft et al., 2021; Hembree, 1990; Kazmagambet et al., 2020). These emotional barriers tend to develop at a young age and significantly interfere with students' academic trajectories.

Research consistently indicates that many students in upper elementary grades develop math anxiety and diminished self-efficacy, which contribute to avoidance behaviors, limited engagement, and ultimately lower academic performance (Barroso et al., 2021; Khasawneh et al., 2021; Levpušček, 2014; Pellizzoni et al., 2022; Živković et al., 2022). These challenges have been compounded by recent global disruptions, including the COVID-19 pandemic and ongoing geopolitical conflicts, particularly in regions such as Israel, which have intensified emotional stress among students and underscored the need for educational programs that combine emotional and academic support (Hasson-Ohayon & Horesh, 2024; Levi-Belz et al., 2024; Sagi & Gilat, 2024). The geometry intervention program used a variety of tools such as games, movement, and visual elements to increase motivation, support active learning, and make geometry more accessible and enjoyable for students. Mental exercises and games were key components, integrated before, during, and after instruction to improve cognitive skills, retention, knowledge retrieval, and emotional engagement (Moore et al., 2022; Zsoldos-Marchis, 2020). These tools encouraged active participation, created a positive classroom atmosphere, and helped develop deeper mathematical thinking (Baranyai et al., 2019; Zsoldos-Marchis, 2020; Zsoldos-Marchis & Hari, 2020). Visual literacy was another key component, with graphics, diagrams, charts, and illustrations used to simplify abstract geometric concepts and

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enhance student understanding (Dondis et al., 1974; Magdaş, 2017; Marchiş, 2013). Visual tools not only supported logical and concrete thinking but also reduced negative emotions and strengthened communication (Botha et al., 2019; Brackett, 2022; Eutsler, 2021; Katranci & Şengül, 2019).

In addition to play and visual elements, the program incorporated movement-based activities, computer simulations, and creative drawing tasks on whiteboards and notebooks, all of which helped students grasp complex ideas through different modalities (Synergy, 2002; Watzman, 1999). The teaching approach was based on Gardner's (1987) theory of multiple intelligences, which recognizes that students have different types of intelligences, such as movement, music, interpersonal, and intrapersonal. By offering diverse learning strategies tailored to these intelligences, the program enabled each student to engage with geometry in a personally meaningful way (Gardner, 1987; Prasetyawan & Gunawan, 2020). The inclusion of music, discourse, practical tasks, and artistic expression not only enhanced conceptual understanding but also fostered emotional resilience and a desire to succeed (Carr et al., 2021; Dias et al., 2021; Laakso et al., 2022; White & McCoy, 2019).

The geometry intervention program was developed with an emphasis on clarity, structure, and practicality, offering both students and teachers clearly defined and manageable tasks, in line with the findings of Asli and Zsoldos-Marchis (2023a), who highlight the importance of simple instructional guidance in strengthening teachers' confidence and managing their teaching practice.

The program included instructional materials that are user-friendly and easy to implement. This intentional simplicity also addresses a common issue in educational reform, where new programs are often interpreted by educators in ways that deviate from their original intent, influenced by personal beliefs or contextual constraints within their schools (Carless, 2004). To mitigate this risk, the intervention provides detailed, simple lesson plans and consistent implementation guidelines.

Beyond the clarity of lesson plans, the program also incorporates emotional support tools to improve students' performance in geometry and reduce the impact of math anxiety. Recognizing the diverse needs of students, the program incorporates strategies that aim to foster self-efficacy and emotional regulation during mathematical tasks. Through creative and experiential activities, such as building geometric models and engaging in reflective projects, students are given opportunities to actively participate, develop self-efficacy, and deepen their understanding. These practices were intentionally selected to create meaningful learning experience that support both academic success and emotional growth.

The designed intervention program was experimented in pilot research, applying the program in a class of students by the first author, measuring the change in geometry achievement, mathematics anxiety and self-efficacy. The final version was developed based on the findings from that phase (Polacco, 2024). Quasi-experimental research on the effect of the intervention program was conducted, involving 3 experimental classes and 2 control classes (Polacco & Zsoldos-Marchis, 2025). Two teachers have participated in this experiment, they have thaught 2 experimental classes based on the detailed intervention program.

This study presents the qualitative findings from interviews with these teachers, examining how the use of emotional and experiential strategies impacted both students and teachers.

2. Methods

The study was conducted during 2023, in an elementary school in Israel.

This case study examines the implementation and impact of a geometry intervention program for fifth and sixth grade students. The study focuses on the perspective and experience of two mathematics teachers (A.M. and E.B.) who taught the program, providing valuable insights through in-depth personal interviews. The goal is to assess the impact of the program on teacher performance, student performance, engagement, and emotional well-being, with a particular focus on reducing math anxiety and fostering self-efficacy. The research method is a qualitative analysis.

2.1. Study Aims

The primary objective of this case study is to reveal the program's impact through the analysis of qualitative data derived from teacher interviews.

2.2. Research questions

Question 1: What is the effect of the intervention program on students in teachers' perceptions?

Question 2: What is the effect of the intervention program on teachers?

2.3. Participants

The study involved two mathematics teachers from the Shaphir School in Israel, who teach fifth and sixth-grade mathematics. The participants were selected based on their role as mathematics teachers for this age group at the school, following the implementation of the research plan. The principal investigator was excluded from participation. The Table 1 summarizing the participants' personal details is presented below:

Table 1. *A table summarizing the participants' details*

Participant	Age	Years of Experience	Teaching Role
A.M.	53	30	A mathematics teacher is in her class, teaching 6 hours per week. Participated in the study for 2 hours per week.
E.B.	37	14	A mathematics teacher across various classes, teaching 6 hours per week. Participated in the study for 2 hours per week.

2.4. Instrument

Semi-structured interviews were conducted with 2 teachers to explore their experience and perception of the program. The interviews lasted 10-15 minutes and were analyzed using thematic and categorical analysis according to Creswell (2018). The interview structure was carefully designed to explore the teachers' experience and perception of the program. The questionnaire consisted of 10 questions.

5 questions addressed the effect of the program on students from the teachers' perspective. These questions focused on topics such as students' coping with challenging tasks (e.g., do students have the ability to apply the tools they have acquired to cope with challenging tasks?) and reflections on changes in students' math anxiety (e.g., did you see a change in students' math anxiety during the intervention program?).

Another 5 questions about the teacher's insights and impressions of the intervention program. Questions addressing teacher feelings about the process (e.g., do you feel that participating in the intervention program increased your confidence as a teacher?) and reflections on the process of the various tools presented in the intervention program (e.g., which elements of the intervention program would you like to incorporate into your future teaching practices?)

The full teacher interview guide questionnaire is included in the appendix for reference.

2.5. Data analysis

Due to the small sample size, the study was approached as a case study. The analysis process involved reading, categorizing, and refining themes to identify key patterns and insights. This approach allowed for the classification and synthesis of key findings, contributing to a deeper understanding of teachers' experience and the impact of the program.

3. Research results

3.1. Research question 1: What is the effect of the intervention program on students in teachers' perceptions?

To address the first research question, a qualitative analysis was conducted based on in-depth interviews with teachers who implemented the intervention program. These interviews were designed

to capture teachers' insights into students' experience, emotional responses, and academic progress throughout the program. By encouraging teachers to reflect on their interactions with students and the impact they observed, this study seeks to explore how the use of emotional support tools impacted students' learning processes. Teachers' perspectives offer an important lens through which to understand the challenges, growth, and meaningful moments that occurred during the intervention. Their reflections help illuminate the holistic impact of the program, revealing not only cognitive outcomes but also emotional and social dimensions of students' development. Following the analysis and coding of the interview data, a number of key categories and themes emerged:

3.1.1. Case Study 1: A.M.

Mathematical Abilities and Engagement

A.M. reported significant advancements in students' understanding and execution of geometric concepts. The precision and accuracy demonstrated by students during problem-solving tasks notably increased. This improvement reflects the efficacy of the intervention program in fostering deeper comprehension and confidence. A.M. highlighted that the structured approach to geometry, combined with the integration of mindfulness techniques, played a pivotal role in enhancing students' performance.

"I saw a significant improvement in how students approached geometry problems. Their precision and confidence increased dramatically."

Effect on Mathematics Anxiety:

A.M. observed a noticeable reduction in math anxiety among students, attributing this to the implementation of breathing exercises and mindfulness strategies. Students utilized these techniques during assessments, resulting in reduced stress and heightened focus. A.M. emphasized the importance of these methods in not only alleviating anxiety but also in fostering an overall sense of calmness and readiness to engage with challenging material.

"Breathing exercises had a profound impact on reducing math anxiety. Students felt more at ease and performed better."

Applicability of Principles and Tools:

The relaxation and mindfulness techniques introduced during the intervention program were not confined to mathematics alone. A.M. noted their application across various subjects, suggesting that these strategies are valuable tools for enhancing students' performance in broader academic contexts. The versatility of the program's principles highlights its potential for fostering holistic student development.

"These techniques are useful not just in math but across subjects. I see students applying them during exams and challenging tasks."

Suggestions for Improvement:

A.M. recommended shortening lesson durations to 30 minutes to optimize time management and sustain student engagement. This adjustment aims to prevent cognitive overload and ensure that students can fully absorb the material presented. A.M. also emphasized the need for professional development to equip more teachers with the skills necessary to implement the program effectively.

"Shorter lessons can help maintain focus and ensure the content is digestible."

3.1.2. Case Study 2: E.B.

Mathematical Abilities and Engagement:

E.B. highlighted increased student participation and active involvement in mathematics. The intervention program sparked greater interest, which translated into improved performance and test scores. E.B. credited the structured yet engaging nature of the program for fostering a positive learning environment that encouraged students to approach math with enthusiasm.

"Students were more engaged and eager to participate, which was reflected in their improved test scores and classroom performance."

Effect on Mathematics Anxiety:

E.B. reported a significant reduction in math anxiety, noting that students appeared calmer and more composed during complex problem-solving activities. The mindfulness techniques embedded in the program instilled confidence and reduced fear, empowering students to tackle challenging tasks without hesitation.

"I could visibly see students' confidence grow. They seemed less intimidated by math challenges."

Applicability of Principles and Tools:

E.B. observed that the program's principles transcended the classroom, aiding students in managing stress and enhancing focus in their daily lives. The development of life skills through the program suggests its broader applicability in fostering emotional resilience and cognitive preparedness in various contexts.

"The program's principles extend beyond academics, helping students develop essential life skills."

Suggestions for Improvement:

E.B. suggested incorporating more interactive, hands-on activities and board games to further enrich the learning experience. This approach aims to make the program more engaging and appealing to students. Additionally, E.B. advocated for professional development opportunities to train educators in the intervention techniques, ensuring wider dissemination and sustained impact.

"More board games would make the program even more engaging for students."

3.1.3. Themes analysis of the teachers' answers

Table 2. *Themes that emerged from the thematic analysis process-Techers*

Theme	Category	Selected Quote:
Improvement in Student Performance	Enhanced understanding Increased accuracy Greater engagement	(E.B) …*"Students were more engaged and eager to participate, which was reflected in their improved test scores and classroom performance."*(A.M) *..."I saw a significant improvement in how students approached geometry problems. Their precision and confidence increased dramatically."*
Effect on Math Anxiety	Reduced anxiety levels Improved focus Increased confidence	(E.B) *..."I could visibly see students' confidence grow. They seemed less intimidated by math challenges." (A.M) ..."Breathing exercises had a profound impact on reducing math anxiety. Students felt more at ease and performed better."*
Applicability of Principles and Tools	Use in various subjects Versatility	(E.B) *..."The program's principles extend beyond academics, helping students develop essential life skills."*(A.M) *..."These techniques are useful not just in math but across subjects. I see students applying them during exams and challenging tasks."*
Suggestions for Improvement	Shortening lesson sets More hands-on activities Professional development	(E.B) …*"More board games would make the program even more engaging for students."*(A.M) *..."Shorter lessons can help maintain focus and ensure the content is digestible."*

Both teachers consistently highlighted the significant benefits of the intervention program, particularly its positive impact on students' learning outcomes, geometric accuracy, and general well-being. The program was particularly effective in alleviating math anxiety and fostering greater engagement in learning activities.

The interviews shed light on the significant impact of the intervention program on academic performance, self-efficacy, and attitudes toward geometry.

Teachers praised the program's success, reflecting improved performance and a shift toward more positive perceptions of geometry lessons, as well as enriching the educational experience. Teachers advocated wider implementation. and use of tools from the program in subsequent teaching.

The findings highlight the critical importance of implementing emotional support tools and strategies within educational settings to promote students' holistic development. This qualitative evidence complements the quantitative findings of the study, which highlights the value of a mixed methods approach in providing a comprehensive understanding of the intervention's impact.

The qualitative analysis of semi-structured interviews with teachers A.M. and E.B reveals the multifaceted benefits of the intervention program on student outcomes in mathematics. The findings point to significant enhancements in students' mathematical abilities, engagement, and emotional well-being, underscoring the program's holistic approach to education.

Enhancements in Mathematical Abilities and Engagement

Both A.M. and reported notable improvements in students' mathematical performance, particularly in geometry and problem-solving tasks. A.M. emphasized the increased precision and confidence observed in students' approach to geometric concepts, attributing this growth to the structured nature of the program combined with mindfulness exercises. Similarly, E.B highlighted the rise in student participation and enthusiasm, noting that this engagement positively influenced test scores and classroom performance. These findings are consistent with research suggesting that active engagement and positive reinforcement play critical roles in fostering mathematical ability and motivation (Ergas et al., 2018; Weare, 2020). Using tasks from different areas of students' daily lives also created more interest and engagement and influenced improved performance. Consistent with research that combines tasks from everyday life and missions from different subject areas, improve performance and achievement (Asli & Zsoldos-Marchis, 2023b; London, 2022).

The structured intervention enabled a shift in students' perspective on mathematics, transforming it from a source of anxiety to an opportunity for growth and exploration. By using emotional strategies, the program not only improved academic performance but also contributed to the development of critical thinking and problem-solving skills.

Reduction in Mathematics Anxiety

A key outcome identified by both teachers was the substantial reduction in math anxiety among students. A.M. observed that breathing exercises and mindfulness techniques had a profound impact on students' ability to manage stress during assessments. This contributed to improved focus, allowing students to approach mathematical challenges with greater ease. E. B. echoed this sentiment, noting visible growth in students' confidence and a decrease in the intimidation previously associated with complex math problems.

These results are consistent with the literature that highlights the importance of appropriate tools for emotional barriers to learning (Fernández-Blanco et al., 2024; Wahyuni et al., 2024). By equipping students with tools to manage anxiety, the intervention program not only enhanced mathematical performance but also promoted emotional resilience, fostering a more positive and supportive learning environment.

Broader Applicability of Program Principles

The intervention program's effect extended beyond mathematics, as highlighted by both A.M. and E.B The mindfulness and relaxation techniques introduced during the program were observed to benefit students in various academic subjects and daily life scenarios. A.M. noted that students applied these strategies during exams and challenging tasks across disciplines, reinforcing the program's versatility. E.B emphasized the role of the program in nurturing essential life skills, such as stress management and focus, suggesting that the principles taught could serve as foundational tools for long-term personal and academic development.

This cross-disciplinary application underscores the importance of embedding holistic educational approaches into the curriculum, recognizing the interconnectedness of emotional well-being and academic success. The program's emphasis on mindfulness serves as a model for fostering

comprehensive student development, aligning with broader educational goals of cultivating well-rounded, resilient learners.

Recommendations for Program Improvement

While the program demonstrated substantial success, both A.M. and E.B. provided constructive feedback aimed at refining its implementation. A.M. recommended shortening lesson durations to enhance time management and sustain student engagement, advocating for sessions lasting no longer than 30 minutes. This adjustment is intended to optimize cognitive load and ensure students remain attentive and receptive throughout the lessons.

E.B. proposed incorporating more interactive, hands-on activities and board games to further enrich the learning experience. This suggestion aligns with research indicating that experiential and collaborative learning methods enhance student engagement and retention (Dias et al., 2021; Pires et al., 2019; Zsoldos-Marchis, 2020).

Effectiveness of Tools and Teaching Strategies

Participating teachers highlighted the usefulness and innovation of the tools and strategies included in the intervention program. The most highly valued components were the integrated presentations that combined emotional and academic elements. E.B. praised the all-in-one lesson format that included activities, timers, and assignments, stating that it helped manage time and maintain structure during the lesson, even though there were lessons that she had not gone through the lesson plan before. “I arrived at the lesson, asked a student to turn on the presentation, and everything went smoothly.”

A.M. found the combination of breathing exercises, videos, and geometry content particularly powerful, noting that it made her lessons more dynamic and cohesive.

A.M. highlighted the impact of using emotional tools in math lessons, describing it as a critical and effective approach for students at this developmental stage. Even E.B., who struggled with implementation, acknowledged that students enjoyed the content and that it had a significant impact on their behavior and engagement in the classroom. This consistent support across different teaching styles and levels of engagement demonstrates the program’s versatility and potential adaptability.

Moreover, not every teacher approached a new program with the same enthusiasm, curiosity, and desire for change and growth. The differences between teachers were truly remarkable.

Significant impact on student engagement and behavior

Teachers noticed significant changes in student behavior and engagement. A.M. noted a significant improvement in focus, emotional openness, and academic initiative, students even initiated breathing exercises before tests, which she found particularly moving. She described a change in the classroom atmosphere, where students were more willing to reflect on their learning experience and mistakes without fear. E.B., although she came to classes less enthusiastically, still saw a positive change in students’ willingness to participate and a boost in the academic performance of a significant number of students.

E.B. and A.M. both reported high levels of student enthusiasm and excitement, particularly regarding the use of videos, AI video integration, and games. E.B. described students’ perception of the program as “modern and cutting-edge,” which contributed to a sense of novelty and engagement. A.M. echoed this sentiment, emphasizing that students enjoyed the integrated nature of the lessons and were more connected to the learning process.

3.2. Research question 2: What is the effect of the intervention program on teachers?

In order to address the second research question, the second part in the depth interviews is designed to investigate teachers’ personal reflection during the implementation of the program, and shed light on how the experience affected their teaching practices. Teachers' reactions provided perspectives on the challenges they face and the expectations that took place throughout the process.

After processing depth interviews, the following categories and themes emerged:

Theme 1: confidence and self-efficacy of the teacher

A.M: … "Absolutely. The program gave me a lot of confidence. I felt I had strong and understandable tools that helped me deal with issues I wouldn't usually touch. I see how I connect and how everything is planned - it made me feel safer as a teacher. I knew I was doing something important."

E.B: …"I can't say I felt completely safe. I really liked the idea behind the program, but I couldn't immerse myself completely or practice the exercises before; there were moments I felt unsure. I went into the process with a lot of concerns."

Theme 2: Perceptions of change in program influence

A.M: …"I see changes to me as a teacher. The program gave me tools to manage and streamline a lesson with several tools, and the presentations have made the lesson more focused, more interesting, and I am surprised how quickly I connected with this new program."

E.B: …"I think the program has potential. I came in with a lack of motivation and reservations, but the simple lessons and support throughout the program helped me connect. So, I think students love it, but I felt I didn't do justice to the full wealth of the materials."

Theme 3: Efficient elements and structure of the program

A.M: …"Incorporating all tools needed for lessons within a presentation aid for class management. Although there were many types of content - videos, games, exercises - it is naturally stream. Everything was just a click away, making it simple and efficient. I loved his structure."

E.B: …"The lessons were very interesting and allowed me to help students easily, because the lesson streams on its own because of the presentation that the selected and controlled student for the whole class helped me inquiries for learning in mathematical exercises. Support, it can be a broad and influential program."

Theme 4: Use of specific tools and resources

A.M: …"I think it's brilliant to use breathing and writing exercises in geometry. It felt strange at first, different and unrelated, but I saw some of my students and I enjoyed - and it also brought a special atmosphere for lessons."

E.B: …"Yes, the presentation format was great.

Theme 5: Long -term adoption and Tikes for Future Teaching

A.M: …"Respiratory exercises before geometry was a game replacement. Now I use them every morning - not just math. I feel like I need it too, and the students join me. It helps start the day calmly.

E.B: …"I am attracted to using games and regular writing. I used to have board games, but I realized that the Internet is faster and more accessible. Every week, I use reflective writing activities in the journal - I also call it 'the expensive journal'. List what they learned, what helped them, and what they exploded is like summarizing their lesson, what helps the teacher themselves."

Table 3. *The teachers' insights and observations about the intervention program*

Theme	**Category**	**Selected Quote:**
Teacher Confidence Emotional Growth	Self-confidence through structured tools. The program strengthened my professional confidence.	(E.B) …"*I learned new emotional tools. I was afraid at first because it was not my field of study, but the videos helped me teach and learn the exercises. "Although there was a big fear, the presentation containing the videos did it for me."*
Pedagogical Insights	Emotional and cognitive progress among students.	(A.M.) …" *I saw a profound change in the way students relate to mathematics. "They became more open... they even started to initiate breathing before tests."* (A.M.) …"*Breathing and writing videos in math class are brilliant "I think it is brilliant to use the breathing and writing exercises in geometry class."*

Effectiveness of Program Tools	Presentations and AI tools made teaching easier	(E.B.) ...*"The students completed the tasks with enthusiasm and with excitement. we really enjoyed the games and the whole experience that each lesson brought with it."* (A.M.) ..."*Using resources, tools, and integration, Built-in tools helped the flow of the lessons "I liked that everything was organized in the presentation... with a timer and tasks."*
Student Effect	Student engagement increased student motivation and participation.	(A.M.) ..."*The students talked about it in front of other classes and shared the experience with other students and family.... It created a completely new and exciting atmosphere."* (E.B.) ..."*They looked forward to the lessons, ... the improvement was also evident in their grades and participation."*
Future Application	Adopting Emotional Tools in Broader Teaching	(A.M.) ..."*Now I do it every day just at the beginning of the day… and the students do it with me."* (E.B.) ..."*Every week I use my precious journal… It's like a lesson summary for the students."*

From the qualitative analysis of interviews with the two teachers who participated in the intervention program, several findings emerged indicating the program's contribution to their personal and professional development. Both teachers described a growing sense of self-confidence, supported by the structural and emotional tools provided during the program. These tools offered a sense of stability and encouraged the teachers to explore new approaches, even those outside their comfort zones.

A prominent theme in the teachers' responses was the development of teacher confidence and growth in professional identity. A.M. expressed a strong sense of empowerment, noting that the program gave her "strong, well-structured tools" and helped her feel confident navigating topics outside her usual realm. This sense of preparedness made her feel that her teaching was more meaningful. In contrast, A.B. admitted to feeling insecure at the outset, as she had not been open to the program and brought fear of unfamiliar tools. However, with the program's preparation and guidance, she felt more confident trying and make an effort. This highlights the importance of appropriate training, accessible materials, and familiarity with the content to ensure teacher confidence and consistent implementation (Asli & Zsoldos-Marchis, 2023a).

Notably, teacher E.B., who initially demonstrated low motivation and few concerns, found that the introduction of novel and engaging tools helped to lower barriers, spark curiosity, and foster a renewed sense of interest and involvement (Fernández-Blanco et al., 2024; Wahyuni et al., 2024). Both E.B. and A.M. reflected on their personal learning experiences. Despite initial hesitation, particularly regarding unfamiliar practices such as breathing exercises, they reported personal and professional enrichment. E.B. shared that the program helped her recognize how students benefit from emotional tools, while A.M. appreciated how the structured presentations simplified complex lessons. These insights suggest that the program not only supported students but also promoted teacher development and best practices.

At the pedagogical level, the teachers emphasized the added value of integrating emotional tools into mathematics lessons—such as breathing exercises and reflective writing. They reported a positive shift in their explanatory approaches, greater emotional openness, increased collaboration, and even independently initiating the use of these tools in their teaching practice. These reflections align with research indicating that experiential learning methods enhance interest and engagement (Dias et al., 2020; Zsoldos-Marchis, 2020).

In addition, the ease and accessibility of the digital teaching tools were particularly appreciated, especially the structured presentations that incorporated all key components of each lesson. These elements made lesson management more straightforward, organized, and enjoyable for the teachers, providing a sense of control and operational simplicity. This supports the idea that lessons can be effectively delivered, even with minimal preparation, when supported by well-designed materials. This is consistent with the literature suggesting that clearly structured, easy-to-implement academic

programs enhance teachers' sense of mastery and classroom management (Asli & Zsoldos-Marchis, 2023a).

Importantly, both teachers chose to continue using several tools from the program even after it ended, including beginning the day with breathing exercises, maintaining a reflective journal, and incorporating game-based digital tools. They viewed the program as a model for effective, experiential, and emotionally responsive teaching that can lead to improved student outcomes. These findings reinforce existing research that highlights the potential of such learning components to enhance performance and achievement (Allbright et al., 2019; Ergas et al., 2018).

Overall, these practices illustrate how the program facilitated lasting changes in teaching habits and classroom routines, suggesting a significant and enduring impact on pedagogical practice. The qualitative data from teacher interviews clearly demonstrates the positive influence of the intervention on both teachers and students. Teachers reported enhanced confidence, professional development, increased student engagement, and long-term adoption of new tools. Nevertheless, the success of such interventions depends on providing adequate training and ongoing support to ensure effective implementation. The findings support the integration of affective and experiential tools in geometry education and underscore the need to incorporate such approaches more broadly in mathematics teaching. This case study offers insights into the experiences of teachers engaged in the program and highlights the pedagogical transformations that can result from the adoption of emotional and innovative instructional strategies.

4. Discussions

The in-depth interviews with the two participating teachers provide rich and nuanced insights into the implementation and impact of the intervention program. Their reflections contribute significantly to understanding how affective and experiential tools can be effectively integrated into mathematics teaching, particularly geometry, and how these tools impact students' learning, engagement, and emotional well-being.

A key theme that emerged from the interviews was the successful integration of experiential learning strategies, such as geometry presentations, games, and creative tasks. Both teachers observed significant improvements in students' ability to understand and apply geometric concepts. This supports the research of Baranyai et al. (2019) et al. and Zsoldos-Marchis (2020), which highlight the benefits of playful and meaningful learning environments in increasing cognitive engagement and fostering long-term retention.

However, teachers' perspectives also revealed pedagogical tension regarding the nature of experiential learning. While A.M. emphasized student engagement and improved outcomes from digital games and interactive applications, E.B. expressed reservations about the lack of additional tangible materials, such as physical board games. E.B.'s position may represent a broader group of educators who struggle to embrace digital tools due to their intangible nature. This contrast suggests a cultural divide within teaching teams: one group embraces accessible, technology-driven strategies, while the other values traditional, tactile resources that they perceive as more creative or grounded. Despite these differences, both teachers agreed that the game-based and creative learning activities included in the intervention program had a positive impact on students' understanding and enthusiasm for geometry.

Teachers also noted the importance of moving to 30-minute lesson plans. This was another area of concern for both educators. While they acknowledged the challenge of condensing instruction, they also saw potential benefits in terms of increased flexibility. This highlights a critical need to find a balance between structured lesson planning and the flexibility required to meet students' emotional and academic needs. It also suggests that shorter, well-designed lessons may offer focused and effective learning opportunities, especially when they utilize emotionally supportive strategies. Both teachers also reported a significant decrease in students' math anxiety over the course of the program. This finding is consistent with previous research (Foley et al., 2017; Ayuso et al., 2021) and highlights the value of emotional support tools in controlling anxious and avoidant behaviors that often inhibit math performance (Hembree, 1990). Additionally, teachers reported an increase in their confidence and self-belief in manipulating lesson plans and easy-to-implement presentations. - A clear indication

of growth in self-efficacy. These observations support social emotional learning (SEL) theory, which emphasizes the relationship between self-efficacy, motivation, and success.

Teachers observed that ongoing feedback played a critical role in both teacher and student performance in the lesson. Interviews revealed that teachers valued the use of reflective writing as a pedagogical tool to summarize a lesson. Reflective practices allowed students to process their learning experience, while also providing teachers with a creative way to conclude the lesson and summarize what was learned by students, who are partners in the learning process. As Moon's (2004) suggests, reflection supports deeper learning and self-awareness, contributing to more meaningful educational outcomes. Teachers' interest in continuing to use these reflective tools beyond the scope of the program further confirms their perceived value. In-depth interviews with teachers shed light on the use of emotional and experiential tools in mathematics teaching. Using a variety of emotional support tools has emerged as a powerful strategy for reaching a wider range of students. Teachers reported that these methods allowed them to connect more effectively with students who had previously struggled with math anxiety or low self-efficacy. This is consistent with Gardner's (1987) theory of multiple intelligences and the importance of using a variety of strategies to meet different learning styles. The findings highlight the importance of inclusive and creative pedagogies in supporting both academic achievement and emotional development, especially in geometry lessons where spatial thinking and visual expression are key.

5. Conclusions

The qualitative insights gained from the in-depth interviews with the two participating teachers offer compelling evidence of the effectiveness of the intervention program in fostering both academic achievement and emotional well-being among students. The program was described by the teachers as simple to implement, well-structured, and empowering. This was due to the clarity and organization of the presentations, which contained all the necessary tools and direct links to the lesson activities. This structure allowed the teachers to conduct the lessons confidently and effectively without the need to make additional changes. The sense of clarity and control increased their willingness to engage in new teaching strategies and offered them a valuable sense of professional confidence within the intervention (Asli & Zsoldos-Marchis, 2023a).

These findings confirm the essential role of experiential learning, emotional support, and reflective practices in geometry teaching. Teachers reported that the combination of diverse teaching tools, such as breathing exercises, reflective writing, and goal-setting techniques, significantly reduced students' math anxiety, increased their self-efficacy, and improved their academic engagement and performance. These results align with the theoretical foundations of social-emotional learning and highlight the importance of supporting students' emotional development alongside their academic growth (Ergas et al., 2018).

This qualitative analysis also served to complement and deepen the understanding of the quantitative results and student perspectives collected in the larger study. Together, these data sources create a holistic picture of the success of the intervention and the key factors contributing to its impact. A key takeaway from the teacher interviews is the importance of teacher awareness of the emotional and cognitive barriers students face in geometry classrooms. By incorporating ongoing feedback, affirming statements, and emotional regulation strategies, teachers can more effectively help students overcome avoidance behaviors and foster a more positive and flexible approach to learning mathematics.

The findings also suggest that emotional support tools should not replace traditional teaching methods but rather complement them. When both cognitive and emotional needs are met for students at the same time, students are more likely to experience significant and sustained academic growth. This balanced approach paves the way for a more inclusive mathematics education that is student-centered, while addressing the simplicity of lesson management and accessibility for teaching staff. This intervention program provides students and teachers with the opportunity to develop both intellect and emotional strength.

6. Recommendations for Future Research

Future research should examine the long-term impact of incorporating emotional support tools into mathematics instruction and consider expanding the intervention to other mathematical domains, such as word problem solving (András, 2021; Magdaș, 2022; Marchiș, 2017). It is also recommended to examine the adaptability and effectiveness of emotional intelligence strategies across diverse student populations, including different age groups, cultural backgrounds, and learners with disabilities. In addition, investigating the implementation of this intervention in other academic subjects may provide a broader understanding of the role that emotional strategies play in improving student engagement, resilience, and academic success across domains.

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Appendix. Teacher's Interview

Thank you for participating in this interview.

We appreciate your contribution to this innovative research program in mathematics education. in the field of geometry.

Please note that this interview is anonymous and will be used solely for research purposes.

The purpose of this interview is to collect feedback from teachers who taught in the intervention program for research in mathematics teaching using emotional and mathematical tools. The program aims to explore new approaches to improving mathematical learning by combining emotional intelligence and various tools to support student understanding and engagement

PART I

Do you feel an improvement in the performance and achievements of the students in mathematics?

Did you see changes in the students' math anxiety during the intervention program? To what extent do you think the students can apply the principles and tools learned?

How can the principles and tools offered by the intervention program be applied in a different (optimal) way?

What suggestions do you have for improvement?

PART II

Do you feel that participating in the intervention program increased your confidence as a teacher? Please explain how and in which areas you felt more (or less) confident.

Were there specific tools or strategies within the program that supported your teaching process or contributed to your professional development?

Were the resources and materials provided within the program appropriate and helpful for your teaching ?Which resources did you find most useful and why?

Which elements of the intervention program would you like to incorporate into your future teaching practices?

Are there any techniques, tools, or ideas that you plan to continue using?

Thank you for your time and participation in this interview.

Your feedback will be invaluable to further research and program development in mathematics education. Sincerely, Dikla Polacco