

Harnessing Restorative Circles to Cultivate an Effective Learning Community in Elementary Mathematics

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Abstract

This paper investigates the perceptions and understanding of mathematics teachers regarding restorative circles and their influence on the learning environment, focusing on elementary mathematics education. Mathematics educators aim to cultivate an environment that supports academic achievement and social development. The study reveals insights into how elementary teachers perceive, understand, and employ restorative circles to enhance mathematics education. Additionally, this paper offers guidance on initiating the implementation of circles in the mathematics classroom.

Keywords: Restorative circles, learning environment, restorative practices

1 Introduction

In the field of education, fostering an effective and supportive learning community is paramount to ensuring students' academic success and personal development. This is particularly true in mathematics, where the often-daunting nature of the subject can pose challenges for students. To address these challenges and create an inclusive, academically enriching environment, educators have increasingly turned to restorative practices. The utilization of restorative practices, originally rooted in the area of conflict resolution and social-emotional learning, has expanded to encompass a wider educational landscape. This paper investigates the implementation of circles, a specific restorative approach, in elementary mathematics classrooms. It explores how these principles contribute to sustaining and enriching the learning community, while also fostering students' mathematical proficiency and social skills.

In education, creating a supportive learning environment is crucial for academic success and personal development, especially in challenging subjects like mathematics. Educators have turned to restorative practices, initially used for conflict resolution and social-emotional learning, to foster inclusivity and academic enrichment. This paper examines the implementation of restorative circles in elementary math classes, exploring how these practices enhance the learning community and promote students' math proficiency and social skills.

The integration of restorative practices within the realm of mathematics responds to a growing awareness of the critical role of classroom culture in effective teaching and learning. Mathematics educators now acknowledge the intrinsic connection between students' mathematical achievement and their emotional and social well-being. As noted by Sears et al. (2022), competencies such as self-awareness, self-management, relationship skills, and decision-making are fundamental in fostering a nurturing learning environment and enhancing mathematics proficiency. By incorporating social-emotional learning strategies into instruction, educators can bolster student engagement, motivation, and perseverance in mathematics (Sears et al., 2022). This paradigm shift has directed educators toward methods that prioritize dialogue, empathy, and understanding.

Restorative practices, as defined by Wachtel (2013), involve a social science approach aimed at building social capital and achieving social discipline through participatory learning and decision-making processes. These practices prioritize relationship restoration and cultivation, extending beyond the classroom to the entire school environment. Hopkins (2016) highlights the growing recognition of restorative practices in education for their role in creating supportive and inclusive learning environments, rooted in healing, accountability, and community building. Understanding the historical and cultural origins of restorative circles is essential to grasp their significance in modern education.

Restorative practices trace their roots to Indigenous cultures and traditional justice systems, where community harmony and reconciliation were paramount (McCold & Wachtel, 2003). Indigenous peoples across various continents have long embraced restorative approaches to resolving conflicts and restoring balance within their communities (Braithwaite, 2002). Incorporating foundational definitions and acknowledging the roots of the practices is essential for honoring their cultural significance and promoting cultural humility in educational settings (Bazemore & Umbreit, 2001). Educators can cultivate a deeper understanding of their principles and effectively implement them in diverse classroom environments.

Restorative circles, a key aspect of restorative practices, serve both proactive and reactive purposes in classrooms. Defined as facilitated meetings for community-building, problem-solving, and more (Fronius et al., 2019), circles have deep roots in Indigenous traditions, serving as platforms for decision-making and healing (Pranis et al., 2003). Symbolizing equality and interconnectedness, circles foster dialogue and relationship renewal (Greenwood, 2004). They offer an alternative approach for addressing classroom needs, promoting collaboration in academics like problem-solving and instruction. Circles also proactively reduce disruptions, supporting conflict resolution and active listening skills.

Educational institutions across the US are increasingly adopting restorative practices to foster positive school cultures and reduce punitive disciplinary measures (Kervick et al., 2020). These strategies emphasize relationship-building and community, focusing on prevention and intervention methods to strengthen relationships among students and adults while reducing punitive discipline (Kervick et al., 2020). Constructive relationships within mathematics classrooms significantly contribute to effective instructional delivery and management. This study explores teachers' perceptions, comprehension, and application of restorative circles to establish and sustain effective academic and social learning environments in elementary mathematics.

2 Methods

A mixed-method approach surveyed participants from elementary school districts in the Midwestern US, encompassing teachers from diverse backgrounds. By integrating both quantitative and qualitative methods, this style allowed for a more holistic exploration of teachers' perceptions and practices. Data collection employed a structured survey instrument tailored to assess the implementation of restorative practices in elementary mathematics classrooms. Adapted from a Restorative Justice survey by researchers at WestEd (Guckenburg et al., 2016), the survey focused on teachers' attitudes, beliefs, and insights regarding restorative practices and the use of circles in their classrooms. The survey comprised 21 questions, including multiple-choice, Likert scale, and open-ended formats. The questions addressed a spectrum of topics, including participants' roles in education, grade levels taught, years of experience, familiarity with restorative practices, implementation in the classroom, perceptions of effectiveness, and willingness, experiences, and perspectives regarding restorative circles. Educators were invited to participate in the survey through email invitations sent

directly to district administrators. The data collection period was carefully planned to allow for sufficient time for teachers to complete the survey while ensuring timely acquisition of data for analysis.

3 Data Analysis

In the pursuit of a deeper understanding of the utilization of circles within elementary school mathematics classrooms, the research has collected data through participant surveys. The purpose was to highlight the diverse experiences and perspectives of elementary school teachers concerning restorative practices, specifically focusing on circles. The paper aims to extract meaningful insights that not only contribute to the existing body of knowledge but also offer practical guidance for educators, policymakers, and researchers interested in enhancing the mathematics learning experience in elementary schools.

Figure 1: Years of experience teaching elementary mathematics.

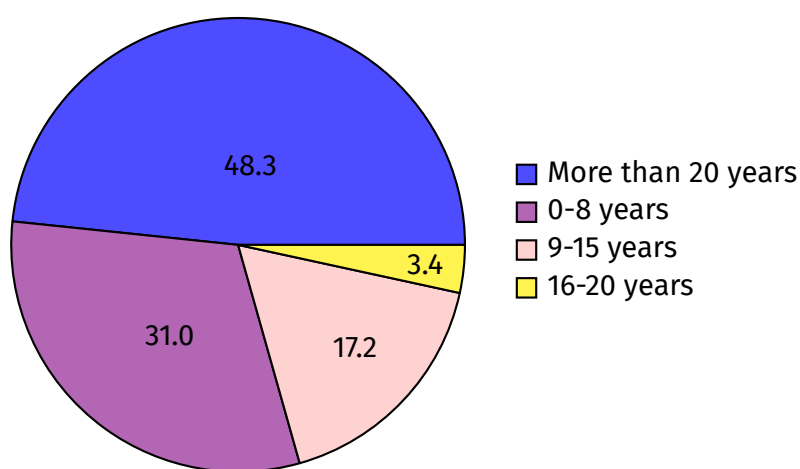


Figure 1 shows the distribution of years of experience among elementary math teachers. Around 48.3% are veterans with over 20 years of experience, while 31% are newer educators with 0 to 8 years of experience. Middle experience brackets (9-15 years and 16-20 years) are less represented, comprising 17.2% and 3.4% of the sample, respectively. This distribution may influence teaching methods, professional development needs, and familiarity with innovative practices like restorative approaches.

Figure 2: Knowledge of restorative practices (n = 32).

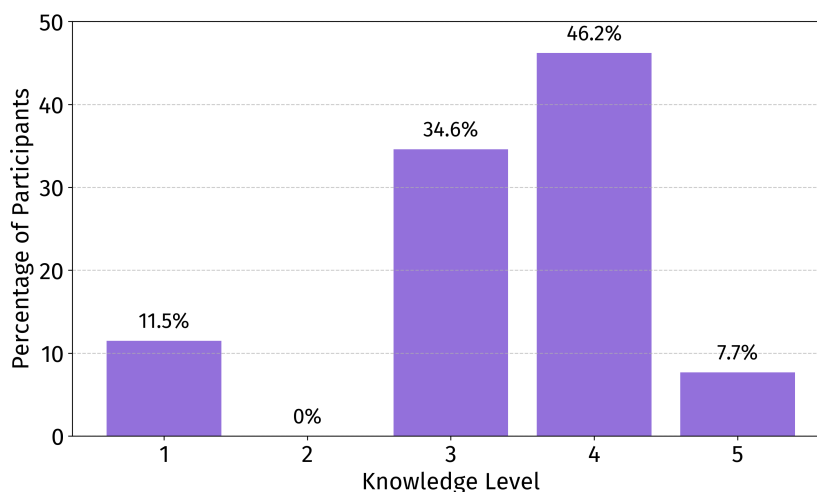


Figure 2 outlines participants' self-assessed knowledge of overall restorative practices, ranging from 1 (little to no knowledge) to 5 (expertise). Results indicate that 46.2% rated themselves at level 4, demonstrating an elevated level of understanding. Additionally, 34.6% rated their knowledge at level 3, indicating moderate understanding. However, 11.5% rated themselves at level 1, highlighting a need for additional training. Particularly, 7.7% rated themselves at level 5, suggesting expertise and potential leadership in implementing restorative practices. The average rating was 3.4, emphasizing the importance of professional development to ensure effective implementation in classrooms.

Figure 3: Impact of restorative practices on students' academic performance ($n = 32$).

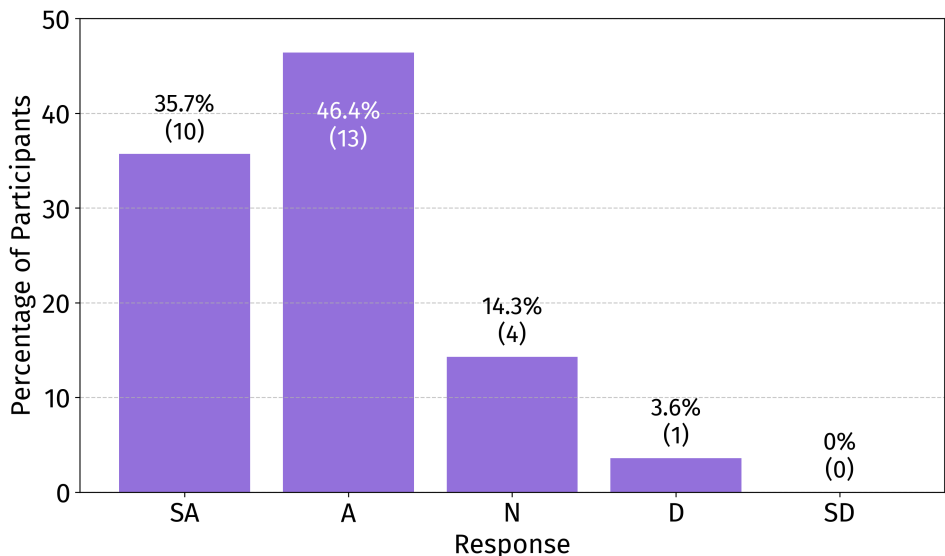


Figure 3 highlights elementary teachers' perceptions of overall restorative practices' impact on students' academic performance. The data shows that 82.1% either strongly agree or agree that these practices have a positive effect. Conversely, only 3.6% disagreed, with no respondents strongly disagreeing. Additionally, 14.3% remained neutral. The findings indicate a predominantly clear view among educators regarding the academic benefits of restorative practices.

Table 1. Engagement in Restorative Circles vs. Academic Benefits

		Have you ever participated in a Restorative Circle? (e.g., community building, disciplinary, academic, etc.) ($n = 29$)	
		Yes	No
Restorative Circles would be academically useful in the classroom (e.g., Calling a circle to review math problems or discuss specific misconceptions)	SA	4	1
	A	7	10
	N	1	6
	D	0	0
	SD	0	0

Table 1 indicates that 78.8% of respondents have participated in a restorative circle, showing familiarity with the practice. Regarding the perception of the academic usefulness of restorative circles, 44.8% either strongly agree or agree, suggesting recognition of their potential benefits in the classroom. However, 34.4% express neutrality or disagreement, indicating some skepticism or uncertainty. The data presents a mixed perception among participants regarding the academic effectiveness of restorative circles.

Figure 4: Initiation of Restorative Circles ($n = 29$).

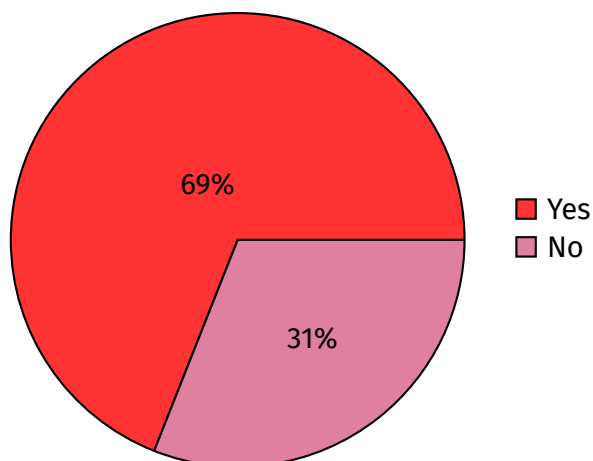


Figure 4 shows data on restorative circle initiation among surveyed educators. Results indicate 31% have initiated circles in their settings, a small portion. The majority (69%) have not, indicating potential for growth. Factors like knowledge, training, and perceived benefits may influence initiation decisions.

Table 2. Perceived Academic Value of Restorative Circles vs Interest in Their Adoption

		Restorative Circles would be academically useful in the classroom (e.g., Calling a circle to review math problems or discuss specific misconceptions) ($n = 29$)				
		SA	A	N	D	SD
Would you consider implementing academic learning circles in your mathematics classroom?	Yes	4	14	0	0	0
	Maybe	1	3	7	0	0
	No	0	0	0	0	0

Table 2 indicates that 68.97% of respondents agree that restorative circles would be academically beneficial, showing recognition of their potential in addressing learner needs in mathematics. Additionally, 48.28% express strong interest in adopting academic learning circles in their school or classroom, while 24.1% fall into the "maybe" category, suggesting moderate interest with reservations. The data suggests that elementary mathematics teachers who see value in restorative circles are more inclined to consider their implementation in the classroom.

Figure 5: Perceived effectiveness of restorative practices in mathematics classrooms.

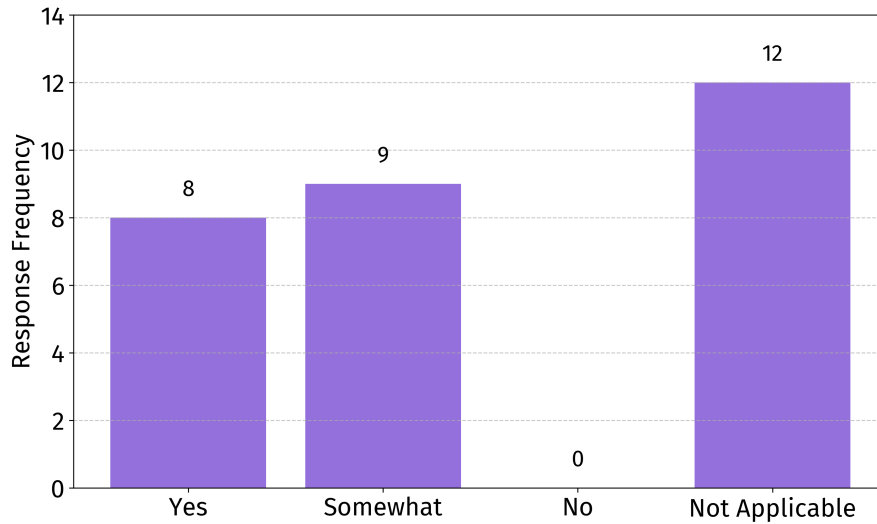


Figure 5 illustrates elementary educators’ perceptions of the effectiveness of mathematics restorative practices in the classroom. 27.6% believe these practices are effective, while 31.0% view them as somewhat effective, indicating a positive perception. None responded with “no,” suggesting a consensus that these practices have some positive impact. Additionally, 41.4% rated “not applicable,” potentially due to lack of experience or perceived relevance in their teaching context.

Table 3. *Additional Thoughts on Restorative Circles in Mathematics Education*

Sample Responses	
A	I do think that it can be a very supportive practice, however, it works best when everyone is on the same page
B	I have successfully used restorative circles for academic purposes when discussing shared inquiry process. I have used restorative circles for community building. I have not used it successfully to address a behavioral problem.
C	I have no experience with Restorative Circles
D	I am sorry, but I have never heard this term before. I do not know if I do something that falls under Restorative Practices or not.
E	We seemed these days to only be focused on test scores
F	My principal says we use restorative practices however our staff has had ZERO training and no conversation about how to effectively use restorative practices. We are all trying to figure it out on our own.

Table 3 displays diverse perspectives among elementary educators on restorative practices in math education. Response A calls for alignment and collaboration, while Response B shares circle successes but notes challenges with behavior. Responses C and D show lack of circle experience, signaling a need for awareness and training. Response E points to challenges prioritizing circles amid standardized testing. Response F highlights gaps between administrative expectations and educator support, stressing comprehensive training. These varied responses emphasize the need for tailored support and professional development in implementing restorative practices.

4 Discussion

The study revealed diverse perspectives among elementary teachers regarding the use of restorative practices, particularly circles, in mathematics education. While some educators embraced these practices to foster positive classroom climates and social growth, others expressed skepticism or uncertainty. This diversity underscores the complexities involved in integrating restorative circles into mathematics learning. Participants acknowledged the positive impact of restorative circles on promoting community, building relationships, and developing conflict resolution skills. However, there is room for improvement in strengthening feelings of belonging and individual agency within the learning environment.

Although most teachers reported using various restorative approaches in their classrooms, many have limited experience and knowledge specifically with circles. Despite this, the majority expressed openness to utilizing circles, recognizing their potential to improve academic performance and reduce disruptions in mathematics classes. Some teachers perceive circles as fitting naturally within the classroom, seeing opportunities to enhance student engagement, foster collaboration, and develop problem-solving skills. These perceptions align with broader goals in mathematics education, highlighting the importance of both academic achievement and social-emotional development.

5 Implementing Circles in the Mathematics Classroom

A powerful approach to foster classroom community in mathematics is through the use of circles. The structure of a circle is central to restorative circles, defined as a round figure where all points are equidistant from the center. In a circle, everyone sits at an equal distance from the center, promoting equality in the classroom. This seating arrangement cultivates a greater sense of community among students and teachers. To ensure equitable participation, circles often employ a talking piece, which can be any item representing the classroom, such as a decorated stick or a ball. The person holding the talking piece is the only one permitted to speak, while others practice active listening. Establishing and agreeing upon a set of norms is crucial for circles to function smoothly. Example norms are illustrated in Figure 6.

Figure 6: Example circle guidelines.

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|-------------------------------|---------------------------|
| 1. Respect the talking piece. | 5. Speak with respect. |
| 2. Be honest. | 6. You may pass. |
| 3. Be a good listener. | 7. Remain in the circle. |
| 4. Wait your turn. | 8. Honor confidentiality. |

Circles offer versatility, allowing each classroom to create a unique setup tailored to its needs. While some classrooms opt for a simple talking piece, others use comprehensive circle baskets containing items like bells, LED candles, and stones, reflecting what is meaningful to their class.

Circles can vary in form and function, serving multiple purposes. Sequential circles require every student to respond to prompts, while non-sequential circles allow for voluntary participation. Some classrooms adopt fishbowl circles, featuring an inner circle for discussion and an outer circle for providing advice and feedback. Examples of circle prompts are depicted in Figure 7.

Figure 7: Mathematics class circle examples.

- **Daily/Weekly Math Check ins and outs**
 - *Example Prompt:* Name one new thing you learned in math class today and one thing you need to work on.
 - *Example prompt:* What is one math skill you want to focus on next week?
- **During Math Class**
 - *Student:* I would like to call a circle because I am having trouble with place value, and I need some help.
 - *Teacher:* After the last assessment, I see many of you had trouble understanding fractions as numbers. Let us do a circle to discuss the common mistakes.
- **Social/Emotional**
 - *Example Prompt:* Today I am going to read some scenarios involving conflicts between students when working in small groups on problem-solving in math. We are going to pass the talking piece around to get some opinions/ideas on how to resolve the conflicts.
 - *Example Prompt:* What is one goal you would like to achieve this week in class?
- **Behavioral/Problem-Solving**
 - *Teacher:* I have seen unkind behavior in this classroom today when we were working in groups. Why is it important to treat everyone in this room with kindness and respect?
 - *Teacher:* We focused on STEAM Learning yesterday when we 3D printed our math shapes. Everyone take a turn and name a characteristic of respectful behavior that you displayed while doing the activity and explain why that is so important when we are working with technology.

In a third-grade classroom, a circle was used for an academic check-in. Students gathered to discuss mathematics story problems. Each shared their understanding of a unique problem chosen from a basket and their approach to solving it. One student expressed difficulty with a question, saying, “I don’t know what the question is.” Using a non-sequential circle, volunteer peers provided explanations and guidance. The circle created a safe, supportive environment where students felt comfortable sharing challenges and receiving peer assistance.

Building trust in a circle takes time. Starting with simple, non-threatening questions allows all students to participate comfortably. As teachers conduct more circles, they can introduce progressively more complex topics for students to share personal perspectives. Assessing participation and the quality of responses helps gauge effectiveness. Maintaining a safe environment is crucial, pausing the circle if anyone feels uncomfortable or unsafe. Circles should always be respectful, following established norms. Teachers should remind students of their roles and clarify boundaries between group sharing and private conversations. Communicating complex topics with parents and administrators via email or newsletter ensures transparency and collaboration.

The implementation of restorative circles in elementary mathematics education faces challenges, as educators encounter barriers that impede integration efforts. One challenge is obtaining administrative support. Research shows successful restorative practices depend on strong leadership and a culture prioritizing relationship-building and conflict resolution (Hopkins, 2016). Teachers may face resistance from administrators unfamiliar with restorative approaches or hesitant to deviate from traditional disciplinary practices (Morrison, 2017). Standardized testing and curriculum mandates may limit time and flexibility for circle implementation (Guckenburg et al., 2016).

Another challenge is gaining student buy-in and participation. While circles emphasize student voice, some may be resistant initially (Gregory et al., 2016). Cultivating a supportive classroom culture requires effort, including active listening, constructive contributions, and creative engagement strategies. Overcoming student reluctance means teachers must model communication skills, offer reflection opportunities, and foster ownership in the restorative process.

This paper examined the perceptions, experiences, and potential implementation of restorative circles in elementary mathematics education. Educators' insights on using restorative practices, particularly circles, to foster positive classroom climates and enhance academic and social development were gathered. The findings reveal varied perspectives among teachers, showcasing both benefits and challenges in integrating circles into mathematics learning. Despite differing familiarity and experience levels, there's a shared recognition of restorative circles' potential to cultivate supportive learning environments where students feel valued and empowered. This work offers practical guidance on implementing circles in math classes, emphasizing trust-building, respect, and student safety. It highlights the transformative potential of restorative practices in promoting student engagement, collaboration, and academic success. Restorative circles emerge as a promising avenue for nurturing inclusive, equitable mathematics learning environments as educators explore innovative teaching and classroom management approaches.

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