

From Noticing to Reflection: Graduate Teaching Assistants' Experiences With Written Classroom Accounts

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Noticing is the first step to reflective teaching. Mathematics graduate teachers used 'brief-but-vivid' classroom accounts to reflect on teaching, documenting weekly moments and discussing them in facilitated groups. Two major themes emerged: (1) Capturing Fleeting Moments, emphasizing subtle classroom dynamics, student behavior, and practical strategies, and (2) Camaraderie and Learning Through Shared Accounts, where peer interaction fostered camaraderie, accountability, and co-construction of professional knowledge. Participants focused more on pedagogy than content, highlighting early instructors' priorities. Findings demonstrate that socially mediated reflection shapes teaching identity, informs instructional decisions, and links individual noticing to collective learning, with implications for designing more effective teaching professional development.

Keywords: Reflective practice, professional development, collaborative learning, teaching assistants, mathematics graduate instructor

Introduction

Overburdened with attending classes, reading, research, teaching, preparing, and grading, Mathematics Graduate Teaching Assistants (MGTAs) seldom have time to reflect on their teaching practices. The result? Many MGTAs exit their doctoral programs having missed opportunities to reflect on and improve their teaching.

Math graduate students juggle multiple roles in graduate school—student, researcher, and teacher. In research universities across the U.S., mathematics classes are often large, frequently exceeding 50 to 100 students (Cuseo, 2007). MGTAs are typically appointed to lead recitation or discussion sessions that support these large classes. Despite their minimal prior teaching experience, MGTAs often begin teaching early in their programs, sometimes on the very first day (Nyquist et al., 1991). Although a significant number may later pursue teaching faculty positions, teaching might be viewed as secondary to research in research-intensive universities (Fairweather, 2002). Especially when time is scarce and more emphasis is placed on research than on teaching, the instructional habits they form during this period can have a lasting impact on their careers.

The purpose of this pilot study is to explore how MGTAs, particularly Mathematics Graduate Teachers (MGTs), experience using “brief-but-vivid” accounts of classroom incidents to reflect on their teaching experience with peers and faculty. These accounts are intentionally descriptive rather than emotive, asking participants to focus on observable events and actions while omitting explanations, justifications, or personal interpretations. In doing so, the accounts functioned as entry points into discussions, enabling peers to engage with the teaching moments without being overly influenced by the writer’s subjective stance. Also, respecting and valuing their time as they navigate the many roles they have. The research questions guiding this study are:

1. How do novice instructors experience and evaluate the process of using writing accounts as a tool for reflection within teaching professional development?

2. What do these accounts focus on? Specifically, what aspects of teaching do novices notice and choose to capture?

Literature Review

Teaching professional development (TPD) trajectories that begin early and continue throughout the teaching experiences of graduate teaching assistants (GTAs) are essential for fostering their growth as educators (Deshler et al., 2015). Continuous PD equips GTAs with the skills, knowledge, and experiences needed to succeed in their teaching roles. Lortie (1975) emphasizes that early teaching experiences play a pivotal role in shaping an individual's instructional identity. For GTAs, these initial teaching roles act as a bridge between their immediate responsibilities as graduate students and their potential long-term academic careers. Consequently, early TPD, combined with opportunities to reflect on teaching practice, can significantly impact not only the quality of MGTAs' instruction but also the broader departmental educational ecosystem and undergraduate learning outcomes (Åkerlind, 2008).

Recent scholarship has highlighted the importance of sustainable TPD programs that support long-term retention and growth for MGTAs as educators (Sadera et al., 2024). While many TPD initiatives provide opportunities for professional growth, these programs often feel short, sporadic, and disconnected from the realities of classroom teaching (Herrmann & Grossman, 2021). Without sufficient support and contextually grounded reflection, GTAs may default to replicating their prior educational experiences or rely on limited personal beliefs about teaching—patterns that can persist into their future faculty roles (Lee, 2019). One way to address this gap is through communities of practice, where novice instructors can share experiences and co-construct professional knowledge with peers and mentors (Wenger, 1998).

Reflection in teacher education is a complex process that involves negotiating values, attitudes, and beliefs, alongside developing cognitive skills (Calderhead & Gates, 1993). For MGTAs and novice MGTs, reflection could allow them to cognitively and introspectively transform their teaching experiences, consistent with Dewey's (1933) view that reflective thought emerges from actively examining one's experiences. Similarly, Schön's (1983) concept of the reflective practitioner highlights the importance of learning through critical reflection on action, both during and after practice. Engaging in reflective practice helps MGTAs and MGTs make sense of challenges in discussion sessions and classrooms, refine instructional strategies, and develop a stronger professional teaching identity, underscoring reflection as a central component of professional growth (Brookfield, 1995; Korthagen, 2017).

Schön (1983) describes the expert practitioner as someone who is awake to and aware of their practice, rather than simply immersed in it (Mason, 2002). Mason (2002) extends this idea, emphasizing that reflection requires *noticing* incidents before one can act upon them. To facilitate this noticing, Mason advocates the use of written 'brief-but-vivid' accounts, which capture key classroom events and provide a starting point for reflection. He explains that brevity is achieved by omitting distracting details, while vividness focuses on observable behaviors that others could independently verify. Furthermore, he distinguishes between giving an "account-of" an event versus an "account-for," highlighting that the former encourages an inner split between actor and observer, fostering reflective awareness (Breen et al., 2014). These accounts can also function as entry points, connecting individual noticing to collaborative reflection in group discussions, which is consistent with the idea of boundary objects in professional learning (Akkerman & Bakker, 2011).

Building on this work, our research team seeks to create conditions in which MGTAs bring their own expertise into reflection, discussion, and critique. By crafting stories that are

meaningful and valuable to them, MGTAs can engage in reflective practices that not only deepen their understanding of teaching but also contribute to the collective professional knowledge of the departmental community.

Theoretical Frameworks & Methodology

This study is framed through a multi-faceted lens of reflection and sociocultural learning theory, emphasizing the lived experiences of MGTs. Schön (1983) explained that *reflection-in-action* occurs during teaching, as instructors respond in real-time to students' needs, confusion, or questions, while *reflection-on-action* takes place afterward, when instructors review classroom events and analyze what happened. Writing 'brief-but-vivid' accounts facilitates this reflective process, providing a concrete means for MGTs to capture and examine their teaching experiences.

Thompson and Thompson (2018) emphasize that reflection should not only help practitioners make sense of past experiences but also inform their future actions, a process they refer to as *reflection-for-action*. This type of reflection serves as a complementary perspective, highlighting how insights gained from writing and discussion inform subsequent teaching and guide future classroom decisions.

Sociocultural learning theory situates these reflective practices within a hands-off facilitated community of practice, emphasizing that professional development is socially constructed through interaction with peers and faculty. In the context of this study, the 'brief-but-vivid' accounts function as objects to enter the discussion, connecting individual noticing to collaborative reflection. Through discussion, MGTs compare experiences, propose strategies, generalize from specific incidents, and co-construct professional knowledge, thereby integrating individual reflection with collective learning in a hands-off facilitated community of practice.

Context and Methods

This pilot study was conducted at a PhD-granting HSI in the southwest. The structure of the mathematics graduate program is that graduate students dedicate their first and second years to coursework, preparing for two written qualifying exams. MGTA starts teaching four discussion sessions on the first day of the program and is expected to teach every quarter if they are offered a TAsip as a source of funding. After meeting specific departmental requirements, these MGTAs are encouraged to serve as the primary teachers of undergraduate courses over the summer, when classes are typically smaller, with approximately 30 students per class. We then refer to them as mathematics graduate teachers (MGT).

Study Participants

Study participants included four MGTs who are the primary teachers for summer undergraduate math classes ranging from pre-calculus to calculus II for life science majors and business calculus. Participants were all in the 4th or 5th year of the PhD program. Their teaching experience varied from their second to third time being the primary teacher at that institution. All study participants had been teaching assistants during their time in this program.

Methods

The data collected for this qualitative study included written 'brief-but-vivid' accounts, semi-structured group meetings, and an individual exit interview. Participants were asked to write three 'brief-but-vivid' accounts of their teaching each week and share those accounts via Google Docs, which all participants could access. These accounts were prompted as follows: Think of a

moment or experience from your class that stood out to you. Describe it as simply and directly as possible—focus on the facts, omitting unnecessary details and emotions. Don't explain why it happened or try to justify the actions involved. Instead, aim to give an account of what happened as if you were an outside observer, just as you would if you were telling someone about the moment without adding your interpretation.

The group meetings served as a space we thought of as a hands-off, facilitated community of practice. Participants met once each week for an hour and a half over a period of five weeks, during which they were teaching. The first author, a peer math graduate student, and the second author, a faculty member who serves as one of the TPD providers in the department, facilitated the group discussions in order to maintain a fruitful, continuous conversation. These group meetings were semi-structured and audio-recorded throughout the 5-week summer term. There was one participant who could not make the group meetings but wrote the 'brief-but-vivid' accounts.

All participants participated in an exit interview, which helped us capture the meta-reflections on the whole process of writing the accounts and the subsequent group discussions.

Preliminary Findings and Discussion

In examining how MGTs described their experiences using the 'brief-but-vivid' accounts in this study, two major themes emerged. These themes highlight both the social and cognitive dimensions of reflective practice, illustrating how the accounts functioned as tools for noticing, processing, and sharing classroom experiences. The first theme, Capturing Fleeting Moments, underscores how documenting subtle, often overlooked classroom events enabled MGTs to engage in reflection-in-action, reflection-on-action, and reflection-for-action, ultimately informing future teaching practices. The second theme, Camaraderie and Learning Through Shared Accounts, emphasizes the ways in which peer interaction, discussion, and mutual support fostered professional growth and a sense of camaraderie. Together, these findings illustrate that reflective practice among MGTs is both individually meaningful and socially mediated, aligning with sociocultural learning theory and concepts of communities of practice.

Capturing Fleeting Moments

A key theme was the accounts' ability to capture fleeting, often-overlooked moments in teaching. Participants noted that documenting small but significant classroom interactions—such as unexpected questions or subtle changes in student behavior—enabled them to reflect on real-time classroom dynamics and their responses. By writing these incidents shortly after they occurred, MGTAs engaged in reflection-in-action (Schön, 1983) while also generating material for reflection-on-action. One participant reflected on how a small observation sparked practical reflection:

But some other things. Like, another interesting one that I had written about was the fact that, like, that one time I left to get water, yeah, like, one minute, you know, and I come back and everyone's just much more bubbly, much more social. This sort of prompted something within me to at least consider maybe I don't have a great answer yet, but like, How can I simulate this without me having to physically leave the classroom for XYZ reason, whatever. So it affected me, I suppose, in these ways, most mostly practical.

This quote illustrates that fleeting classroom moments, when captured and reflected upon, can lead to practical insights and potential strategies for future teaching. The act of writing accounts not only promotes noticing but also supports reflection-for-action (Thompson & Thompson, 2018), helping MGTs anticipate and plan responses to similar situations in the future.

Camaraderie and Learning Through Shared Accounts

A significant theme that emerged was the social dimension of reflection—participants emphasized learning from their peers and experiencing a sense of camaraderie. One participant remarked, “It doesn’t only happen to me,” highlighting that challenges and successes in teaching were shared across the group rather than experienced in isolation. Another participant reflected on the supportive yet accountable nature of the group:

Like more intention about, like, how we're teaching, or like how we're dealing with situations...in a group that's like an accountability group as well...we do reflect on it, and I share what we did...Sure, it's like a judge-free environment, but like, to some extent...

Participants described how reading and discussing peers’ accounts provided opportunities to compare experiences, share strategies, and learn from one another. One participant noted:

Yeah, I definitely learned a lot from other people's accounts. I also felt like I got to share some experience...you're not alone in those experiences...you hear somebody else has something similar going on in their classroom...And then there were some new ones for me...so now I feel like I would think about them now, like, how am I going to address that if it ever happened to me?

Therefore, engaging with peers positions reflection as a collective rather than individual practice, allowing participants to recognize their teaching experiences as shared and socially situated. Through this process, the group functioned not only as a supportive, judgment-free space but also as an informal accountability structure in which participants exchanged strategies, surfaced common challenges, and jointly made sense of their instructional decisions.

What Aspects of Teaching Do MGTs Capture & Discuss?

Analysis of the accounts revealed that MGTs primarily focused on pedagogical and classroom management aspects rather than on mathematical content itself. Common observations included students not answering questions, minimal student interaction, writing more visibly on the board, use of technology, and other practical classroom strategies. These findings suggest that novice instructors are especially attuned to the flow and dynamics of teaching—how students engage, respond, and interact—rather than the technical content being delivered.

Interestingly, the research team noted that there was minimal attention to mathematics itself in the accounts, which was surprising given that the participants were teaching math courses. This highlights that early-career instructors may be more focused on how to teach effectively, rather than on content mastery, particularly when balancing multiple teaching, research, and student roles.

Through capturing these observations, MGTs engaged in reflection-in-action and reflection-on-action, attending to observable behaviors and classroom interactions that directly impacted the teaching and learning environment. The accounts provided a space for noticing both challenges and small successes, creating opportunities to improve instructional strategies and develop pedagogical awareness.

These findings raise several questions for future research. One particularly compelling question is: How might TPD programs better integrate content-focused reflection with pedagogical reflection, so that novice instructors attend both to what they teach and how they teach it? Addressing this question could provide insights into designing professional development that more fully supports the dual goals of content mastery and effective pedagogy.

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