

# Examining the Development of Adaptive Expertise of Mathematics Language Routines Through the Lens of Reflective Practices Within a Studio Day

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## Introduction

It is important to examine and identify best practices to support in-service teachers' development of adaptive expertise of mathematics instruction for multilingual learners. Engaging in reflective practices are one such way to develop adaptive expertise (Anthony et al., 2015). Professional learning, such as Studio Days (Elliott & Roberts, 2024), creates opportunities to engage in reflective practices. The research question that guided this study was: How did opportunities for reflective practices within a Studio Day Cycle support mathematics teachers' development of adaptive expertise of mathematics instruction for multilingual learners?

## Framework –Reflective Practice & Adaptive Expertise

- **Reflective practice:** Teachers as metacognitive about their own practice, looking inward, and reflecting on their practice (Cavanagh & Prescott, 2010).
- We are interested in **catalysts** for reflection, those events or incidents in which teachers can reflect on their practices.
- We use Muir and Beswick's (2007) three-level model to examine reflective practices:
  - **Technical descriptions:** teachers recalling general accounts of classroom practices;
  - **Deliberate reflection:** teachers identifying 'critical incidents' and providing rationales for past and future actions; and
  - **Critical reflection:** moving beyond identifying 'critical incidents' to consider others' perspectives and offer alternatives
- **Adaptive expertise** broadly refers to the process of teachers' recognizing and identifying emergent needs, making sense of multiple perspectives, and orchestrating multiple teaching approaches to meet the demands of different situations (Hatano & Inagaki, 1984; Yoon et al., 2015).
- We draw on Yoon et al.'s (2015) categories of:
  - **Flexibility:** exhibits an awareness of students, particularly multilingual learners and context, as related to MLRs;
  - **Deeper level of understanding:** brings in variations related to the MLRs and consider affordances and constraints of the MLRs; and
  - **Deliberate practice:** demonstrates motivation, focus, and repeated effort to monitor their practice and devises and subsequently attempts improved implementation.

## Methodology

- Purposeful sampling (Miles et al., 2020) was used to recruit the district's mathematics instructional support specialist, three Math 7 and two Math 8 teachers from the three district junior high schools from a single Studio Day Cycle in Fall 2023 focused on the MLR Collect & Display.
- We video- and audio-recorded each meeting of the Studio Day Cycle, and utilized the videos and transcriptions of each meeting to examine the types of reflective practices that teachers engaged in.
- We created content logs of the videos to identify notable instances of reflective practices and then coded (Miles et al., 2020) the transcriptions for the type of reflective practice using Muir and Beswick's (2007) three-level model.

## Findings

- Teachers engaged in all three types of reflective practices, although most often in **technical descriptions**.
- In the Pre-Studio Day, teachers primarily engaged in **technical descriptions**, because teachers were just becoming familiarized with the MLRs, as well as **flexibility**, because of the teachers' attention to multilingual learners.
- In the Studio Day, **deliberate reflection** and **critical reflection** were most present, because of opportunities to reflect on actual classroom enactments. With adaptive expertise, teachers showed **flexibility** and **deeper level of understanding**, because of their attention to multilingual learners and their awareness of students' language use.
- In the Post-Studio Day, **deliberate reflection** and **critical reflection** were most present, because of opportunities to reflect on video from classroom enactments and reflecting on future enactments. Teachers engaged in **deeper level of understanding** and **deliberate practice** because they were able to share how they would integrate the routine into their future instruction.

## Discussion

The Studio Day cycle provided opportunities to engage in reflective practices to curate catalysts of reflective practices that specifically supported teachers' development of adaptive expertise of language-responsive mathematics instruction.

## References



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Figure 1  
Structure of a Studio Day Cycle  
(Roberts et al., 2025)

