

Reframing Reluctance as a Turning Point for Students' Critical Mathematical Thinking

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Students' reluctance in mathematics classrooms is commonly associated with disengagement or lack of understanding. Research on affect and productive struggle suggests that reluctance may reflect cognitive–affective tension when learners encounter conflicting ideas (Warshauer, 2015). In socially contextualised mathematical tasks, these tensions may extend beyond procedural difficulty, as students interpret quantitative results, evaluate consequences, justify decisions, and consider real-world implications. Such forms of engagement correspond to key dimensions of Critical Mathematical Thinking (CMT), defined as the capacity to use mathematics to address real-world problems while also considering the consequences of proposed solutions and associated actions. CMT integrates mathematical, evaluative, reasoning, and critical capabilities, together with dispositions to reconsider assumptions (Geiger et al., 2025). However, little is known about how reluctance relates to CMT and may be interactionally reframed as a turning point for its emergence. This study examined how reluctance, conceptualised as tension between students' mathematical results and their willingness to act on them, is interactionally constructed and reframed as a moment in which CMT can emerge. Drawing on a case study of a Year 7 classroom in Queensland, Australia, involving a socially contextualised fundraising task, the study captures how moments of reluctance emerged during mathematical problem-solving interactions between students and teachers. Data included video-recorded classroom interactions and a video-stimulated recall interview with the teacher. Using interactional analysis, episodes of reluctance were identified through observable indicators including hesitation, uncertainty, and resistance to revising solutions. Reframing was traced through shifts in classroom dialogue. Analysis showed that reluctance emerged when unexpected mathematical results conflicted with the feasibility of students' proposed solutions. Teacher contributions that redirected students' attention to task constraints were associated with shifts toward evaluative, reasoning, and consequence-oriented engagement aligned with dimensions of CMT. These findings offer insights into how classroom interactions can support the development of critical mathematical thinking during mathematical problem-solving.

References

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