

# CRITICAL MATHEMATICS INSTRUCTION MODEL FOR HIGH SCHOOL MATHEMATICS CLASSROOM BASED ON URBAN CONTEXT

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## ABSTRACT

Critical Mathematics Education (CME) connects mathematics with social justice. Grounded in the Frankfurt School's *Critical Theory* and Paulo Freire's *Critical Pedagogy*, this study aimed to 1) examine and synthesize current CME practices in Thai mathematics classrooms, and 2) develop a CME-based instructional model for upper secondary education grounded in urban contexts. The research comprised two phases. Phase 1 used qualitative methods—interviews with five mathematics education scholars and five teachers, along with classroom observations—to explore existing practices. Findings revealed a key gap: most participants viewed CME merely as analytical problem-solving rather than a framework for examining structural inequalities through mathematics. Three major barriers emerged: structural (centralized curriculum, limited time, exam-oriented assessment), cultural (hierarchical schooling and Thai norms discouraging debate), and professional (teachers' limited readiness and support). Yet participants agreed that CME could be feasible with appropriate support, particularly through teacher preparation, local integration, and flexible curricula. Building on these insights, Phase 2 used participatory action research with 40 Grade 11 students at Nareerat School, Phrae, to develop and test a CME model emphasizing conceptual clarity, pedagogical structure, and cultural sensitivity. The model encourages students to use mathematics to question inequality, link learning with their communities, and recognize their agency in social change. Despite challenges, the study shows that implementing CME in Thailand is both possible and valuable when aligned with national educational and cultural contexts.

**Keywords:** Critical Mathematics Education, Critical pedagogy, Participatory Action Research, Thai Education

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