



Using Generative AI to develop maths tasks with a focus on social justice perspectives

Sabahat Awan

Australian Catholic University

sabahat.awan@myacu.edu.au

Tracey Muir

Australian Catholic University

Tracey.Muir@acu.edu.au

Chrissy Monteleone

La Trobe University

c.monteleone@latrobe.edu.au

Kimberley Wilson

University of the Sunshine Coast

Kwilson7@usc.edu.au

This study examined how ChatGPT can support the design of Social Justice Mathematics (SJM) tasks for Year 5 and 6 students. It focused on tasks that enable students to use mathematics to investigate authentic social issues, such as inequitable access to healthcare in Australia. The paper presents a literature-informed framework to guide teachers in designing, selecting and evaluating SJM tasks. The framework includes seven dimensions: tasks should be embedded in social or equity-based issues; be mathematically rich and cognitively demanding; promote critical reflection and action; encourage multiple perspectives and solutions; support student agency and decision-making; be contextualised in students' lives or meaningful real-world settings; and use real-world data (e.g., Gutstein, 2006). Together, these dimensions ensure that mathematics is not merely placed within a social context, but is used purposefully to examine fairness, justify decisions and consider possible action.

Two educators began with the same detailed prompt for ChatGPT and independently refined the responses through iterative follow-up prompts. Each final task was then evaluated against the SJM framework to determine the extent to which it met the seven design principles. The findings show that the framework is valuable for teachers in two connected ways. First, it can be used as a prompting tool: teachers can include its dimensions in requests to ChatGPT, helping the tool generate tasks that have a clearer social purpose, meaningful mathematics and appropriate real-world data. Second, it offers an evaluative lens that teachers can use to identify strengths, gaps and areas requiring revision in AI-generated materials. For example, teachers can check whether a task provides sufficient mathematical challenge, genuinely invites different perspectives, supports students to make decisions, and moves beyond simply mentioning a social issue. The study emphasises that ChatGPT can be used as a co-designer rather than a finished source of classroom materials, with teachers needing to recognise what is pedagogically or mathematically missing, request targeted revisions and use their professional knowledge to adapt tasks for their students (Cameron & Mesiti, 2024). In this way, the framework helps teachers retain control over task quality while using AI efficiently to develop authentic, engaging and socially meaningful mathematics learning experiences.

References

- Cameron, S., & Mesiti, C. (2024). What Kind of Mathematics Teacher Is ChatGPT? Identifying the Pedagogical Practices Preferred by Generative AI Tools When Preparing Lesson Plans. In J. Višňovská, E. Ross, & S. Getenet (Eds.), *Surfing the waves of mathematics education. Proceedings of the 46th annual conference of the Mathematics Education Research Group of Australasia* (pp. 135–142). MERGA.
- Gutstein, E. (2006). *Reading and writing the world with mathematics: Toward a pedagogy for social justice*. Taylor & Francis. <https://doi.org/10.4324/9780203112946>

For more information, please refer to the following paper presented at the 48th Annual Conference of MERGA in July 2026.
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