Learners' Negotiation on Mathematical Task Choices

Jasneet Kaur
University of Auckland
Jkau508@aucklanduni.ac.nz

This study explores how groups of students select and justify their choice of which mathematical tasks to work on. Four groups of three students enrolled in a university bridging mathematics course were presented multiple tasks and were asked to choose one task at a time to work on together. The tasks varied in terms of familiarity, openness, context and representation. Following Yeo (2017), both open and closed tasks were included. Contexts included word problems, modelling-oriented situations and critical mathematics contexts. They were presented in symbolic, visual and digital forms of representation. Each group participated in three sessions, making a total of 12 sessions, and students participated in focus group interviews afterwards. Sessions were conducted outside regular classroom hours to fit their timetable.

Data was collected through work samples, video-recorded observations, and focus group interviews. Their written work, including task selection and working sheets, were collected as work samples. Each session, lasting approximately 90 minutes, was video recorded using two cameras, one capturing students' interaction and the other their mathematical work. Following each task choice activity, semi-structured focus group interviews of around 25 to 30 minutes were conducted to explore students' justifications behind task choices, their experience of working on the tasks, and their feelings towards mathematics.

Positioning Theory (Herbel-Eisenmann et al., 2015) is used as an analytical framework to examine students' interactional processes during task choice at the episodic level, with interview data used to understand students' reasoning for their task choices and their learner identity construction.

Preliminary findings suggest that mathematical task choice is an interactional accomplishment, shaped by both mathematical and non-mathematical justifications. Tasks perceived as familiar were selected most frequently; however, familiarity did not operate as a simple dichotomy between familiar and unfamiliar tasks. Instead, familiarity emerged as a negotiated resource within group discussions. Initial analysis also indicates that students' positioning within the group influenced how task preferences gained acceptance. Dominant participants were more likely to shape decisions using more non-mathematical arguments, whereas flexible collaborators used mathematical arguments in the decision-making process, and followers often adapted their preferences during discussion.

During the presentation I will share these preliminary findings on how students make task choices and invite discussion on how such interactional processes may relate to the mathematical learner identity construction.

Acknowledgements

Ethics approval UAHPEC28826 was granted by University of Auckland, and all the participants gave informed consent.

References

Herbel-Eisenmann, B., Wagner, D., Johnson, K., Suh, H. & Figueras, H. (2015). Positioning in mathematics education: Revelations on an imported theory. Educational Studies in Mathematics, 89(2), 185-204.

Yeo, J. B. W. (2017). Development of a Framework to Characterise the Openness of Mathematical Tasks. International Journal of Science and Mathematics Education, 15(1), 175–191. https://doi.org/10.1007/s10763-015-9675-9

(2026). In N. Berger, M. Thompson, J. Ley & C. Wilsmore (Eds.), *Beyond boundaries: Strengthening futures in mathematics education. Proceedings of the 48th annual conference of the Mathematics Education Research Group of Australasia, Sydney* (p. 494). MERGA.