

Co-teaching Mathematics in Flexible Learning Spaces: What is the Effect on Pedagogy and Achievement?

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The traditional classroom was designed in the 1800s and was characterised by an authoritarian approach, where the “sage on the stage” would impart knowledge, facts and procedures to the masses. In the 1970s, countries began to experiment with open classrooms, incorporating student choice of activity and time frames, more small-group collaboration, and combining of subject areas. Although this transformation faltered, recently there has been a resurgence in the construction of flexible classrooms and use of associated pedagogies. For example, in 2017 the NSW Department of Education invested \$6 billion towards public school infrastructure, aimed at remodelling schools' learning spaces to “engage students in ways that reflect 21st century learning” (Kariippanon et al., 2019, p. 572). This was in conjunction with the implementation of the NSW Mathematics K–10 Syllabus (Education Standards Authority, 2012), which had an increased focus on developing “mathematics through inquiry, exploring and connecting mathematical concepts, choosing and applying problem-solving skills.” However, as Kariippanon et al. state, the assumption that changing the structure of the classroom will translate into changes in the teaching and learning process is not supported by empirical evidence. In a survey of 822 schools, Imms and Byers (2017) found that non-traditional classrooms account for 25% of classrooms across Australia and up to 50% in some sectors. As flexible learning spaces become more common, researchers and teachers need to determine the impact these spaces have on learning.

At the start of 2022, a study was initiated to focus on one Western Sydney secondary college that had numerous flexible learning spaces. The spaces have no focal point, thus were designed to increase the student-centred nature of classes and the amount of problem solving involved in lessons. As the study progresses, it will consider the Year 8 cohort, all being taught in flexible learning spaces using a co-teaching model and the Year 7 cohort, who are all being taught in traditional classrooms. Comparing the experiences of each group, the study will explore the students' perceptions of what is important when learning mathematics and determine whether there are any differences in achievement. The study foci are:

- Pedagogy: Focusing on whether there is a difference in the amount of time spent on surface level questions compared to deep problems and the amount of teacher talk in each environment. Similarly, whether there is a difference in how often a lesson is launched with a problem compared to starting with an explanation.
- Mathematics learning: Students will rank what is important when learning mathematics, recalling facts, remembering procedures, breaking down questions into steps and understanding why a procedure works.

References

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