# Use and Development of Mathematical Processes During an Online Escape Game

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Mathematical processes, such as problem solving, reasoning and proof, representation, connections, and communication are considered drivers of mathematical thinking (Isoda & Katagiri, 2012) and essential components of mathematical learning (Neyland, 2004). However, as an unintended consequence of curriculum redesign, they have declined in visibility from mathematics learning experiences in New Zealand primary school classrooms (Clune, 2021; McChesney, 2017). Parallel to this, the last decade has seen the education sector inundated with digital tools (applications, programs etc.) that claim to facilitate learning. While many studies support the use of digital tools to enhance engagement (Attard & Holmes, 2020) research evidence to support claims made by the vendors of these tools, regarding learning, is scarce. My study, conducted with 12–15-year-old school students, aimed to explore how a purpose-designed, fully online, digital "escape game" could make mathematical processes central to the student experience. I used Sfard's (2008) theory of commognition to analyse the conversations and interactions of students as they engaged with the game. The preliminary findings suggest that the digital escape game enriched the use and development of core mathematical processes, such as problem-solving, reasoning, and communication, and facilitated making connections within, across and beyond mathematics. However, there are implications regarding the design of digital experiences like the one in this study. For teachers, a core design challenge lies in pre-empting the learning conversations as well as designing learning tasks that will provoke entry and allow for immersion into the intended discourse—how the tasks are designed may mean the difference between whether the students action "ritual" or "explorative" routines (Sfard & Lavie, 2005).

## References

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