



Do Primary School Teachers Prefer Digital or Non-Digital Games to Support Mathematics Instruction?

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Games are frequently used by primary school teachers to support mathematics teaching and learning; however, to date teachers' preferences for a given game mode have not been explored. To shed light on this issue, 84 teachers participated in professional learning workshops where they compared pairs of digital and non-digital modes of addition and subtraction games that were functionally equivalent. In this context, we use the term 'functionally equivalent' to refer to the fact that the digital and non-digital mode of the game were equivalent in important ways including: the game objective; the rules that governed game play; and the types of mathematical representations used within the game. During the workshops, for each pair of games, the digital game was explained and played by teacher-participants (approx. 10 minutes), followed by the corresponding non-digital game (approx. 10 minutes). Teachers were then invited to complete a pen and paper questionnaire to reflect on their experiences.

Findings revealed that teachers were far more likely to indicate interest in using the non-digital mode of a game with students back in their classrooms. This is despite the fact that their views about whether the non-digital game was more effective for supporting learning, or would be preferred by students, appeared to depend at least somewhat on the specific pair of games being compared. Comfortably the most common reason provided for preferring the digital game was the reported richness of the digital landscape to draw students into the game; that is, sound effects, graphics, movement, characters and storyline. This explanation resonates with the notion that digital games involve players interfacing in an environment that has been principally constructed to entertain. By contrast, the most frequently offered reason for preferring the non-digital game related to its hands-on nature and opportunity to utilise concrete materials. Other notable reasons included opportunities for interaction and discourse, and the potential to modify the game for different learners. Interestingly, the idea that a given mode of the game was more engaging from a student perspective, or easier to setup, emerged as a reason for preferring both the digital and non-digital modes. Moreover, while some teachers preferred the digital game specifically because they had a general preference for using such games, other teachers indicated a preference for the non-digital game precisely because they perceived digital games to have specific disadvantages, such as the potential for cognitive overload.

Although prior research has revealed similar cognitive and affective benefits to using non-digital and digital games in the primary mathematics classroom, previous studies have tended to not consider teacher views concerning the types of games they prefer to utilise to support instruction. Future research should consider conducting classroom-based quasi-experimental and/or observational studies to examine whether the comparative pedagogical benefits of playing non-digital games anticipated by teachers are actually borne out in practice. Moreover, such research should examine the extent to which these benefits are moderated by factors such as the teacher's digital literacy, as well as their beliefs about digital technology.