Exploring the use of online interactive platforms to support dialogue in primary mathematics classrooms

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Introduction

- Productive classroom dialogue has been increasingly evidenced its supportive role in mathematics learning (e.g. Howe et al., 2019, Webb et al., 2014).
- Productive classroom dialogue is characterised by active participation, open questions, elaboration, reasoned discussion of different viewpoints, linkage and coordination across contributions, and metacognitive engagement in dialogue (Howe et al., 2019).
- A growing body of research suggests that the appropriate use of digital tools could open up, broaden and deepen 'dialogic space' (Wegerif & Major, 2018) where multiple perspectives can be openly shared, critically and creatively linked and synthesised and new meaning collectively constructed. However, pedagogy plays a paramount role in realising the potential.
- After the COVID-19 pandemic in China, more schools have been exploring blended learning supported by online interactive technology.
- A part of design-based research for developing a teacher professional development programme to support dialogic teaching with digital tools in primary mathematics schools.

Research questions

RQ 1: What are the affordances of the online interactive platforms enacted to promote productive dialogue?

RQ 2: What are students' perceptions of the mathematics learning experience mediated by the platforms?

Methodology

- **Research context:** two Chinese private primary schools implementing 'Bring Your Own Devices' project. Eight different mathematics lessons in the two schools (three of each school). One school used *Padlet,* the other school applied *Quanjing Platform (Zoomabc).*
- **Participants:** eight primary mathematics teachers; a focus group of 3-4 students in each class.
- **Research approach:** qualitative multiple case study
- **Data collection methods:** lesson observations, semi-structured interviews with focus groups of students, multimodal contributions on the platforms.

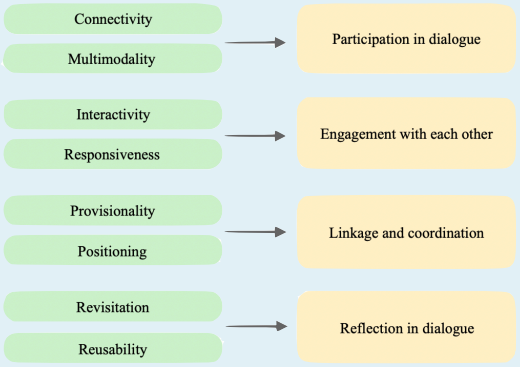
Analysis and key findings

Data Analysis

- **Lesson observations:** the lesson episodes relating to the use of online interactive platforms were identified and transcribed verbatim. Using Ethnography of Communication to further segment the episodes into a chain of events, which were rated by a three-point rating scale. For those events graded three points, the enacted affordances were categorised through inductive and deductive processes. These high-rated events were further analysed using the *Teacher Scheme for Educational Dialogue Analysis* to examine the effects on dialogue (T-SEDA Collective, 2021: https://www.educ.cam.ac.uk/research/programmes/tseda/).
- **Interviews:** thematic coding approach.

Key findings:

- **The enacted affordances enabling productive dialogue:**



- **Students' perceptions:**
  Benefits: making contributions at any time; representing ideas in various forms; more opportunities to view, comment, question and discuss with peers; receiving peers' feedback; promoting reflection.
  Challenges: familiarity with the digital platform; self-regulation; talk skills.

Practical implications

- Establishing ground rules to facilitate a dialogic ethos in the classroom and help students enhance skills of talk;
- Selecting and using online interactive platforms with dialogic intention;
- Designing the mathematics tasks that can open up a dialogic space containing multiple viewpoints;
- Enhancing dialogic teaching (e.g. reasoned coordination) and critically reflecting on dialogic practices with digital technology.

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