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

Qian Liu
Faculty of Education, University of Cambridge

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.

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.

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.

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.

Contact: Qian Liu
ql282@cam.ac.uk