

https://dspace.org/

The relationship between textbook affordances and mathematics' teachers' pedagogical design capacity (PDC)

Leshota, Moneoang

2015-08-11
http://hdl.handle.net/10539/18211

Downloaded from a DSpace repository. https://dspace.org/

ABSTRACT

Mathematics textbooks are ubiquitous in classrooms but research on how teachers use this resource which is a major resource and often the only resource that teachers have access to, is "fledging" (Remillard, Herbel-Eisenmann, & Lloyd, 2009, p. xiv). The study investigates the teacher-textbook relationship between the affordances (J. J. Gibson, 1977) of the textbook and teachers' capacity to perceive and mobilise these affordances for productive mediation of the object of learning, that is, teachers' pedagogical design capacity (PDC) (Brown, 2002, 2009).

Theoretically grounded in socio-cultural theory wherein all humans are inherently social beings and grow from and through the use of tools (Vygotsky, 1978), the study aligns itself with a conception of textbook use as "participation with the text" (Remillard, 2005, p. 221) and where teaching is a design activity (Brown, 2009) to develop conceptual frameworks for determining the affordances of the textbook, as well as teachers' mobilization of these affordances.

The analysis of the textbook produces two major affordances for the teachers' practice as the *mathematical content* **and** the *approach to the teaching and learning* of this content. The analysis of teachers' lessons on the other hand shows that teachers make *injections* to the textbook content, some of which are robust while others are distractive. However, an important result of the analysis of the lessons is that the teacher-textbook relationship is a function of the *critical omissions* from the textbook that the teacher makes.

The key findings of the study are that for the teachers in the study, their textbook use is generally *tacit* and *not deliberate;* their relationships with their textbooks are *not intimate*, resulting in generally *low* PDCs. Thus, the study warns against notions that making textbooks available implies deliberate use; and argues that textbook use needs to be mediated in order to be deliberate.