

Thesis abstract

Targeted, one-to-one instruction in whole-number arithmetic: a framework of key elements

Thi Lê Trần

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In Australia, although there has been strong advocacy for individualised intervention programs, there is a limited research literature available that focuses on teacher-student interactions and teaching practices related to one-to-one instruction. This investigation seeks to address that gap. Its aim is to identify and illuminate the nature of Key Elements of one-to-one instruction that expert tutors use when interacting in intensive, one-to-one instruction of whole-number arithmetic with Years 3 and 4 students. A Key Element is a micro-instructional strategy that is the smallest unit of analysis of highly interactive one-to-one instruction.

The investigation draws on data collected within the framework of the Mathematics Intervention Specialist Program (Wright, Ellemor-Collins & Lewis, 2011). From this source, approximately 33 hours of video recordings of teaching sessions involving four teachers and six students were analysed.

The theoretical perspective underpinning the investigation is interpretative. Within this perspective, a phenomenological approach was used to gain insight into the essence of the Key Elements of one-to-one intervention teaching. A standard method for analysing the data, that is, “close observation” (Van

Manen, 1997, p. 68), in which the Key Elements are viewed as the central phenomenon requiring exploration and understanding, was employed. The analytical techniques described by Van Manen (1990, 1997), and further elaborated as procedures for phenomenological analysis by Hycner (1999), were applied. As well, the investigation utilised methodological approaches described by Cobb and Whitenack (1996), and by Powell, Francisco, and Maher (2003), for analysing large sets of video recordings.

Twenty-five Key Elements were identified and, for each, a deeply layered description was developed. As well, a comprehensive framework for analysing one-to-one instruction was conceptualised. The framework shows how Key Elements can be used to analyse intensive, one-to-one instruction in whole-number arithmetic.

The investigation advances understanding about teacher-student interactions and teaching practice in intensive, one-to-one interventions. Understanding the Key Elements leads to more effective ways to characterise the instructional strategies that teachers utilise in one-to-one intervention teaching. The framework developed constitutes an extension of the current body

of theoretical knowledge about targeted one-to-one intensive intervention in whole-number arithmetic. It will inform teachers who are working with low-attaining students by providing useful information about teacher-student interaction in mathematical interventions, which in turn may illuminate how particular teaching intervention practices influence student learning outcomes (Tran & Wright, 2014b).

Dr Thi Lê Trần
School of Education
Southern Cross University
Lismore NSW 2480
Australia

Email: tranlethicdsp@yahoo.com

