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2012

Teaching for students' transition from Number to Algebra

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Presented at ECU Research Week 2012
This Presentation is posted at Research Online.
http://ro.ecu.edu.au/crje/20

Edith Cowan University
School of Education

Teaching for students' transition from Number to Algebra

Christina Lee

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Main Aim of the Study

1. To examine teachers' beliefs about the teaching and learning of algebra;
   i. Explicit teaching and inquiry based learning
   ii. Value and importance of algebra
   iii. Self efficacy beliefs for teaching algebra

2. To investigate how these beliefs inform current classroom practices used by teachers' to foster conceptual development of key beginning algebraic ideas?

Background

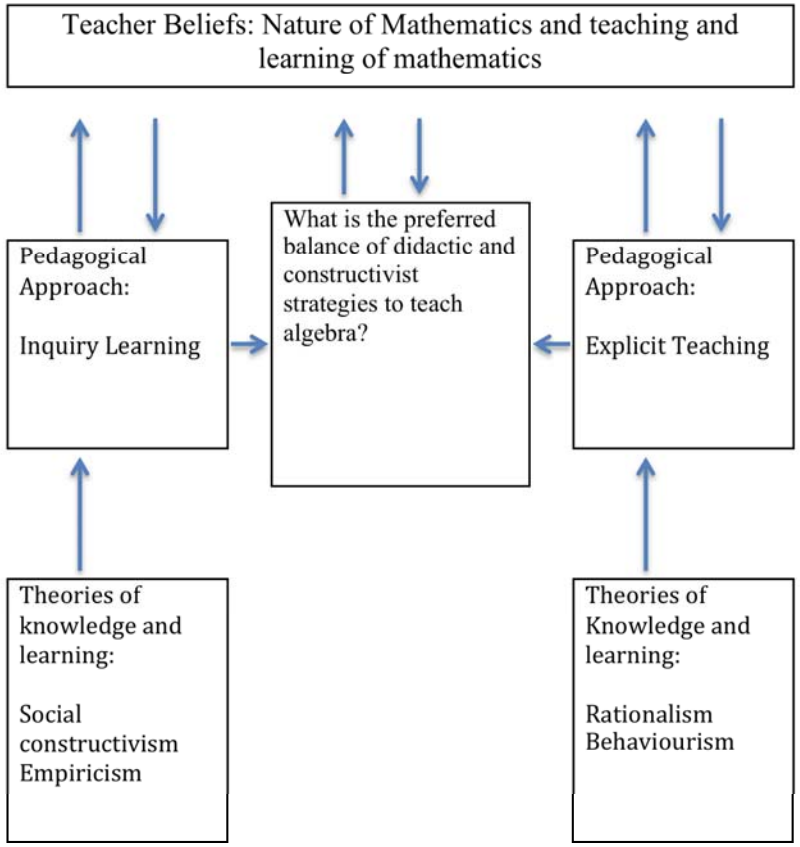
- In the twenty first century there is a growing need by society for thinkers and problem solvers. Algebraic techniques foster higher order thinking skills.
- If students want to study mathematics at the higher levels in senior school an understanding of basic algebraic concepts is essential.
- The Australian National Curriculum will see younger students in Western Australia exposed to algebraic thinking.
- Teachers who would not as a rule have taught algebra in the past will find themselves having to do so.

Significance

- It is hoped that the findings of this research will contribute to the existing knowledge by providing a useful insight into the teaching of beginning algebra and the beliefs, which underpin teachers' practice.

- Examination of beliefs and practice will also provide a useful platform from which to undertake future research into the efficacy of particular strategies chosen by teachers in terms of student learning outcomes in beginning algebra.

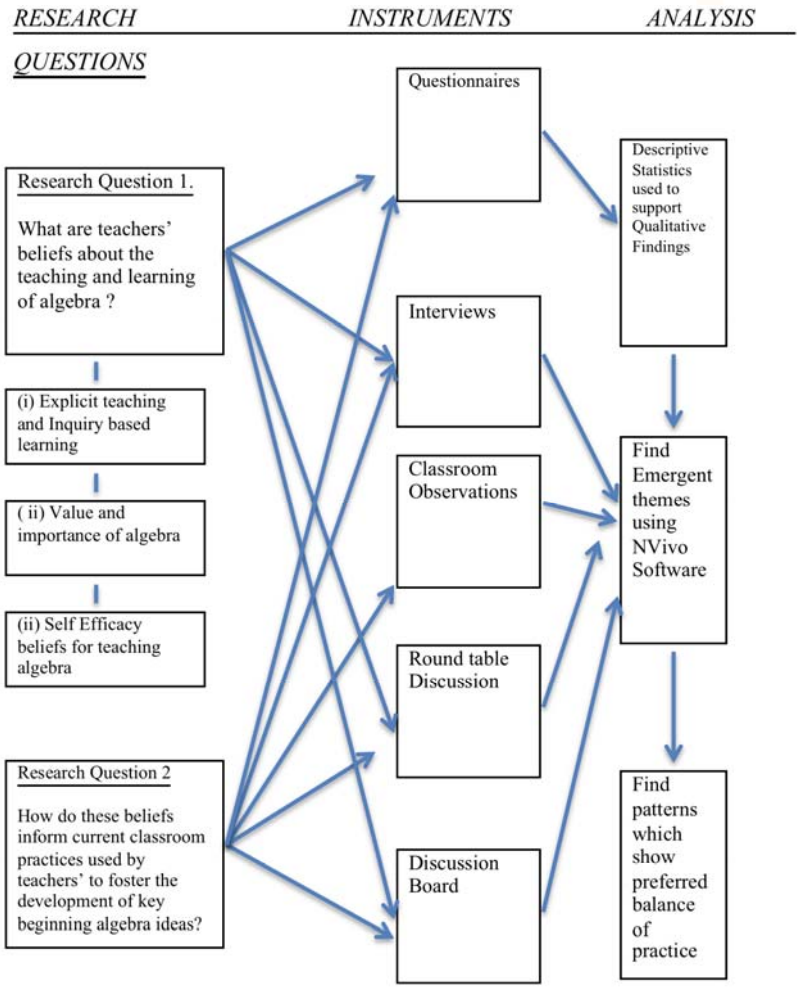
The Conceptual Framework



Research Design and Methods

- This is a holistic study about teaching for students' transition from conceptions of number to wider ideas incorporating algebra.
- This research is set within social constructivist and socio-cultural theory.
- A mixed methods approach is being taken in the collection and analysis of the data gathered from the research.
- The study will examine a set of four separate cases to create one study, by combining and interpreting qualitative and quantitative data.

Data Collection



Areas for Future Research

- "Across all the different traditions of classroom research, the dominant focus has been on learning. This has led to assumptions that teaching is mechanical, an adaptable means to an end which can be changed quickly and easily to accommodate new perspectives on learning and interaction. Our view of teaching differs from this. We see it as a complex process of supporting specific learning goals through managing interaction in dynamic social spaces, where the teacher has an unavoidable leadership role which includes sustained motivation and engagement in classroom activities.

- Experienced teachers construct a bespoke learning experience for each student and each group of students, drawing on an array of knowledge, pedagogies, artefacts and activities to achieve the desired outcomes". Sennett (2008)