Title: Understanding South Australia primary children’s thinking and misconceptions in decimal numbers

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Description of the study:
This study titled ‘Understanding South Australia primary children’s thinking and misconceptions in decimal numbers’ aims to gain insight into South Australian students’ general performance in a variety of decimals tasks. These tasks including comprehending place value after the decimal point; the proper use of algorithms for computation of decimals; and the application of decimals to “real life” problems. More specifically, it aimed to investigate students’ error patterns. Analyzing students’ errors can reveal faulty arithmetic and problem-solving processes; and perhaps highlight deficits in classroom instruction. An overarching rationale for the study is to contribute to an increased understanding of students’ conceptions and misconceptions about decimals in order to inform the focus and framework for teaching decimals. This project is supported by School of Education, Flinders University.

Purpose of the study:
This project aims to
- investigate students’ error patterns in a variety of decimal tasks;
- inform South Australian pre-service and in-service teachers about general (mis)conceptions of teaching and learning decimals;
- enhance students’ learning through restructuring the focus and framework of teaching decimals in accord with students’ learning difficulties revealed in the research.
What will I be asked to do?
You are asked to give consent for the participation of your child to be involved in this project. Each participant will be required to undertake a 45-minute mathematical test during class time at school. The test content is set according to the official Mathematics syllabus in SA. The test will be administered collectively to the students between March and June 2014. Participants will be well informed that the purpose of the test is for gaining knowledge about their learning and not for personal examination and school assessment. This test will have no effect on student grading. This is voluntary.

What benefit will I gain from being involved in this study?
The major aim of the project is to understand students’ conceptions and misconceptions of decimal number for restructuring the framework of teaching decimals in primary schools. The project will inform South Australian mathematics educators, in-service and pre-service teachers about how to improve classroom teaching. It is hope that all SA students will be benefitted.

Will I be identifiable by being involved in this study?
The project is entirely anonymous as children will not be identifiable to the primary researcher through their participation. Confidentiality, informed consent and the written test will be obtained by assigning each participant an identification number and storing data in a locked filing cabinet in a locked office. Other related typed-up file will be stored on a password protected computer that only the principal investigator will have access to.

Are there any risks or discomforts if I am involved?
There are minimal risks of discomfort for participant while doing the written test. Anxiety could possibly be felt while answering test questions but as the test has no effect on student grading and formal school assessment, this is unlikely. Each participant will be asked their willingness to participate before assessment by circling a happy or sad face on the ‘Child Assent Form’ plus asking for verbal consent – inclusive of a verbal consent tick box that the researcher ticks an record form. If student does not feel like to do the test, the student can choose not to participate on site.

How do I agree to participate?
Participation is voluntary. If you agree to let your child participate, please read and sign the Parent Consent Form which accompanies this information sheet and return to the class teacher. You are free to withdraw from the research at any time without effect or consequences.

How will I receive feedback?
A school-level feedback on students’ achievement and common misunderstanding of the mathematical concepts that are under investigation will be given to school for their reference.

Thank you for taking the time to read this information sheet and we hope that you will accept our invitation to be involved.

This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project number: 6289). For more information regarding ethical approval of the project the Executive Officer of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email human.researchethics@flinders.edu.au