INSTRUCTIONAL STRATEGIES AND TASKS DEVELOPED IN A TEACHING EXPERIMENT ON PROBABILITY MODELING

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This study developed probability tasks and used them in a teaching experiment to investigate the impact of instruction on the modelling strategies of children in grades 3 and 4. Instructional strategies that were used are reported.

The research addressed the void in research-based knowledge of students' thinking in probability modelling by investigating the thinking of 6 students in grades 3 and 4 on contextual tasks that incorporated probability modelling. The teaching experiment consisted of 7 sessions: pre-assessment; 4 instructional sessions; short-term post-assessment; and long-term post-assessment. During the teaching experiment, the students' own cognitive strategies were used as a basis for planning and implementing instruction. The teacher-researcher posed tasks developed from this process, with some probes from the witness.

Instruction and tasks were influenced by four main teaching/learning patterns found in analysis of the transcripts and artefacts: (a) subjectivity in probability reasoning, when it exists, is difficult to counteract through instruction; (b) having students record their matchings of sample spaces for generators and tasks made the correspondence strategies they used more transparent for these students; (c) students use and think about discrete models differently than continuous models; and (d) two-dimensional modelling requires substantial accommodations for children.

Results indicate that young children use idiosyncratic and correspondence strategies, and that even a student whose idiosyncratic reasoning is deeply lodged can progress to using correspondence strategies with assistance from carefully designed tasks and probes. External representation may play a role in students' flexible use of correspondence strategies and probability generators, both discrete and continuous.

REFERENCES

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