

“Patterns and Changes” in Mathematics

Page Index

[Description](#)
[Participants](#)
[Findings](#)
[Outcomes](#)
[Impact](#)
[Related Documents](#)

Quick Links

[Download Infosheet](#)
[Download Report](#)
[Visit Website](#)

Project Title	Investigating Some Rural Students’ Understanding of “Patterns and Changes” in Mathematics
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Organisational Base	SiMERR NSW

Description

[↑ Top](#)

This project aims to investigate rural students’ understanding of patterns and changes at six different stages of the NSW Board of Studies Mathematics Syllabus, namely, Early Stage 1 and Stages 1 to 5. A teaching experiment methodology will be used in which the individual student solves (Stages 2 to 5) or a pair of students collaboratively solve (Early Stage 1 and Stage 1) tasks while at the same time communicating their thinking and reasoning. The researcher will be posing questions to challenge students’ responses to confirm her model of students’ developmental understanding. It is acknowledged that students’ knowledge construction will be affected by the social interactions. Tasks selected for each Stage will be as recommended in the NSW Board of Studies Mathematics Syllabus and as appropriate for students from rural and regional areas. Schools are to be selected from the New England region.

Each student solved a series of problems which focus on a particular type of pattern. As they solved problems, they were asked to describe their understanding of the type of pattern, the repeating unit, predict more terms and categorise pattern types from a mixture of types. Students were exposed to different representations of patterns from concrete to diagrammatic, numerical and graphical.

Problem solving sessions were 40 minutes per session, conducted once a week over six weeks for each student or pair of students. All sessions were audio-taped and transcribed in preparation for analysis. Students’ work was collected and photocopied for subsequent analysis.

Analysis of students’ work will identify conceptual benchmarks of students’ developing understanding of patterns, changes and covariations, as they make sense of the tasks in terms of the language and representations they use to describe their understanding of quantitative patterns, and schemes used to apply in similar contexts and/or new contexts.

Participants

[↑ Top](#)

Six indigenous students from a regional primary school.

Findings

[↑ Top](#)

A preliminary overview of the data collected indicates that students at different levels have different conceptions of “patterns”, “repeating units” and “changes”.

Outcomes

[↑ Top](#)

Impact

[↑ Top](#)

Students enjoyed the problem solving activities. Excited discussions of the activities spilled over into their normal classes as reported by their classroom teachers. More on this when the in-depth analysis is completed.

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[↑ Top](#)

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