

PUZZLE-BASED LEARNING IN UNIVERSITY MATHEMATICS: STUDENTS' PERSPECTIVES

Tanya Evans*, Sergiy Klymchuk**, and Mike Thomas*

*University of Auckland, New Zealand

**Auckland University of Technology, New Zealand

In this talk, we present an overview of a project aimed at integrating puzzles, paradoxes, sophisms and provocations (later for convenience called just ‘puzzles’) into university mathematics courses during traditional lectures. By a *puzzle* we mean a non-standard, non-routine problem with a counterintuitive answer and a surprise solution presented in an entertaining way. Normally a puzzle looks deceptively simple and doesn’t require specific knowledge (domain free). The intention of using puzzles in teaching and learning is to engage students' emotions, creativity and curiosity and also enhance their critical thinking skills. The theoretical considerations of the project were based on the Puzzle-Based Learning concept (Michalewicz & Michalewicz, 2008) that has become increasingly popular worldwide and Guilford’s well-established model of creativity (Guilford, 1959). The impact of the pedagogical strategy was evaluated via questionnaires, interviews and class observations involving 137 students from four groups at two universities. Each lecturer used puzzles in their lectures on a regular basis (2-3 a week) during a semester. The students were able to choose to solve them individually or in small groups in class. It took only 7-10 minutes a week and was not part of the course assessment. The vast majority of the participants reported that integrating puzzles in their courses helped them to improve their problem-solving (91%) and generic thinking skills (92%). Also, 82% of the participants commented on other benefits from using this pedagogical strategy – primarily increasing motivation and enhancing creativity. The project was an extension of a pilot study by Klymchuk (2017) and was supported by a grant from Ako Aotearoa New Zealand National Centre for Tertiary Teaching Excellence.

References

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