

Undergraduate Learning Difficulties and Mathematical Reasoning: Thesis Preface

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July 10, 2001

Abstract

This PhD thesis consists of five parts: (1) A literature survey and an overview of a larger research project with the same title, including background and framework. Then follows the four main papers of the thesis, presenting completed studies within the larger project: (2) A study on four students' task solving difficulties, indicating that the students were more focused on what is familiar and remembered, than on mathematical reasoning and accuracy. (3) An extension of the former study by developing an analytical framework, and focusing on the quality of their reasoning. It was found that the reasoning was more 'superficially experience-based' than mathematically based. (4) A study describing detail how most textbook exercises may be solved without considering the core mathematics of the textbook, mainly by copying solved examples, and how this may lead to the behaviour above. (5) A study of the ways students conduct their homework that, among other things, confirms that they are restricted to using the superficial procedures found in (4).