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By

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דוקטור לפילוסופיה

מוגשת למועצה המדעית של

מכון ויצמן למדע

רחובות, ישראל

מאת

שי אולשר

שינויים בספר הלימוד המוצעים על ידי

מורים תוך שימוש בויקיספר

Changes in the textbook suggested

by teachers using a Wikibook

Advisor:

Prof. Ruhama Even

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מנחה:

פרופ' רוחמה אבן

כסלו תשע"ה

Abstract

This study focuses on the changes teachers suggest in the mathematics textbook they use in their classroom, while editing it as a team using a wiki-book working environment. The aim of the study - to learn about these changes - raises the following research questions: (1) What are the characteristics of the changes teachers suggest to make in the textbook when editing it collaboratively? (2) What characteristics of the technological platform offered to the teachers (Media-Wiki) present difficulties in the collaborative editing of a math textbook, and how could they be addressed?

The study followed the first year of a multi-year project that invites teachers who use *Integrated Mathematics* textbooks in their classroom teaching to edit the textbook collaboratively. In the first year of the project, the nine participants edited the textbook *Integrated Mathematics for the 7th Grade.*

This study was performed using a qualitative research methodology, and analyzed the changes to the textbook suggested by the teachers using the Activity Theory 3 level model (Leont'ev, 1974), and the Expanded Mediational Triangle - EMT (Engeström, 1987).

Four main types of changes to the textbook were identified: (1) Creating organizers to improve the teachers' work and accessibility to parents (4 changes), (2) Integrating technological tools for improving mathematics teaching and learning (4 changes), (3) Re-structuring textbook content presentation to better suit student learning (4 changes), and (4) Adding materials for students with low achievements (3 changes).

The main characteristics of the technological platform (Media-Wiki) that presented difficulties in the collaborative editing are the editing interface of the Media-Wiki platform, the version comparison interface, and the inaccessibility of content in the project website. Tackling these challenges included adding buttons to the edit toolbar that enable adding customized templates to the text thus easing the editing of texts, development of a unique version comparison interface, and designing the website pages' content in a manner that enables using it as a roadmap and organizing tools. Performing these adaptations of the platform required different types of expertise (technical and content).

This study could contribute in a number of ways. The first is to improve the scientific community's ability to learn from teachers' "wisdom of practice", while also revealing

areas that require professional development. In addition, this study could assist textbook developers and the Israeli Ministry of Education to better understand teachers' needs, desires and aspirations regarding textbooks and the mathematics curriculum. Thirdly, analyzing the different characteristics of teachers' collaborative work in an online environment when suggesting changes to the textbook they use in their classroom may shed light on the difficulties the teachers encounter, while assisting in finding ways to deal with these difficulties.