Chapter 15
Working in a Wiki Environment:
Preservice Teachers' Experiences and Perceptions: The Case of Geometry

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EXECUTIVE SUMMARY

This chapter describes a case where a class of preservice teachers used the wiki environment to discuss existing geometry lessons, improve the lessons and build new ones. The constant comparative methodology was used to analyze the experiences of the preservice teachers in working with geometry in the wiki environment and in developing their knowledge of geometry and its teaching and learning.

The case study shows that the discussion option in the wiki was used by the preservice teachers not only for discussing issues related to geometry lessons, but also for discussing issues related to psychology and philosophy. This points at the potentiality of the wiki to be a rich educational and cultural environment for students.

The wiki environment enabled student-only discussions, as well as student-instructor discussions. This implies that students working in the wiki environment can have control over their own learning. In addition, the wiki environment did not only give the preservice teachers an opportunity to develop their knowledge as learners and teachers of geometry, but as designers and builders of web sites.

The preservice teachers confronted four types of difficulties throughout their whole work in the geometry wiki environment, but they could overcome these difficulties using different means, especially discourse. Overall, the preservice teachers found that the wiki environment benefited them and appreciated the various functions which the wiki enabled.

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BACKGROUND

Wikis are used and constructed by students for various targets. Taylor (2006) described the advantages that wiki technology offers: (1) it is available 24 hours a day, (2) it is easy to navigate, search and make contributions, (3) changes, new information and successful improvisations can be quickly documented, and (4) new, revised or alternative worksheets can be attached for subsequent use by anyone. Grant (2006) described wikis as "new and powerful form of software capable of supporting a range of collaborative ventures and learning activities". Forte and Brukman (2007) suggested that wikis could be used by students not just as a kit for writing to learn, but as a kit for public knowledge building in schools. Head and Eisenberg (2009) found that higher education students use Wikipedia as a unique and indispensible research source for conducting their researches. They added that this collaborative, community-based online source gave students a big picture and language contexts for their research projects. Head and Eisenberg (ibid) reported that in 8 out of 11 of the student discussion sessions there was a strong consensus among the students that their research process began with Wikipedia.

It can be concluded that the wiki technology serves various educational functions for teachers and students. This makes the wiki technology an option that preservice teachers can utilize to build their knowledge. This chapter will describe preservice teachers' wiki-experiences in the case of discussing, improving and building geometry lessons, and in the case of developing their content and pedagogic content knowledge. In addition, the chapter will describe the difficulties encountered by the preservice teachers while living the experiences, how they overcame these difficulties and the benefits they found in working in the wiki environment.

SETTING THE STAGE

Wikis in Education

Wikis can support the delivery of class curriculum and projects, as well as the discussion during the process of creating and sharing knowledge (Leuf & Cunningham, 2001). Tonkin (2005) identified four categories of the wiki use in the education field:

- **Single-user:** This use allows individual students to write and edit their own thoughts. It is useful for revision and monitoring changes in understanding over a period of time.
- **Lab book:** This use enables students to peer review notes kept online by adding commentary, annotations or other additions to existing lecture notes, seminar discussions, lesson plans, etc.
- **Collaborative writing:** This writing can be carried out by a team for joint project or for research such as a group initiative, essay or presentation.
- **Knowledge base:** Through collaborative entries, students can create course content that supplements and extends delivered material.

Raman, Rayn, and Olfman (2005) examined the use of wikis in facilitating the creation of a knowledge management system. They chose the wiki technology for its following characteristics: (1) Wiki technology is easy to install (and free), (2) Wiki technology provides capability for easy access and editing, (3) Wiki technology allows a class to develop a knowledge base readily, and (4) Wiki technology can aid knowledge creation and sharing in both corporate and academic settings. Raman, Rayn, and Olfman (ibid) found that wikis can support collaborative knowledge creation and sharing in an academic environment. The factors that influence the success to provide such support

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