

From Social Communication to Mathematical Discourse in Social Networking: The Case of Facebook

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ABSTRACT

Though some studies describe attempts to integrate Facebook in education, little is known how to use it in mathematics education. This article describes an attempt to populate Facebook with mathematicians from the past, as well as strategies to involve the friends with the mathematics of the mathematicians. The experiment shows that Facebook can attract the friends to content knowledge, beginning with social talk, and transiting gradually and smoothly to mathematics content knowledge through cultural discourse. The experiment implies that Facebook, representing social networks not intended from the beginning for education, can be adopted successfully for mathematics education.

Keywords: Facebook, History of Mathematics, Mathematical Discourse, Mathematical Learning, Mathematicians, Social Communication, Social Networking

INTRODUCTION

Web 2.0 tools are being suggested for some years now for social life, communication, and work in various disciplines, especially in education (Alexander, 2006; Glogoff, 2005; Pempek, Yevdokiya, & Calvert, 2009). Some of these tools are the wiki, the blog, Facebook, Twitter, Second Life, Wiggio, etc. Among those who suggest these tools for education are researchers in various international conferences. For

example, Ğorĝ Mallia, Henk Eijkman, Asher Rospigliosi at the International Conference on Information Communication Technologies in Education 2010 suggested these tools for instruction, learning and student engagement. Being attendants at the conference, we were part of the discussions moderated by Ğorĝ Mallia and Henk Eijkman in two workshops about the possibilities that Web 2.0 social networks and tools, especially Facebook, can afford to education. There our idea to use Facebook in mathematics education began.

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Literature Review

Social networking sites are quickly becoming ubiquitous online (Munoz & Towner, 2009). Stelter (2008, as reported by Munos and Towner, *ibid*) mentions some of the most popular of these networking sites: Myspace, bebo, and Facebook. According to Boyd and Ellison (2008), social networking sites can be described, regardless of their differences, as web-based services that enable the users to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. Munos and Towner (2009) conjecture, regarding the capabilities of social networking and especially Facebook, that they can benefit both the instructor and the student by suiting different learning styles, by enabling the teacher to have alternative teaching methods, by enabling the building of online classroom communities, and by increasing teacher-student and student-student interaction. Further, the National School Boards Association (NSBA) (2007) points that school students use social networking sites to support their educational activities. The NSBA reports that nearly 60% of the respondents who use social networking sites discuss education-related topics online, and more than 50% specifically discuss schoolwork. The popularity of the social networking sites and the beginning of their use as educational tools indicate that these sites have the potential to motivate students to engage more actively in their learning through utilizing the sites' various technical options. The most important of these options are the sites' communication tools, for example, the chat, email, comments and 'likes' in Facebook. These options and potential meet the requirement of the National Science Teachers Association (2003) in the standards for science teacher preparation that science teachers should attempt to guide their students' learning by encouraging their conversations about scientific ideas. The communication tools of the social networking sites can help build learning environment rich of students'

conversation and discussions, and thus fruitful for building the scientific knowledge of students. Schroeder and Greenbowe (2009) say that one goal of the NSTA requirement is to help students articulate how they know, what they know, and how their knowledge connects to larger ideas, other domains, and the world beyond the classroom. These ideas were behind our intention to experience social networking sites, in our case Facebook, in our preservice teachers' preparation. We intended that our preservice teachers enrich their knowledge about mathematics, historical mathematicians and mathematical objects, procedures and relations through conversing and discussing these entities and through solving mathematical problems. This intention agrees with Smith and Peterson (2007) who describe knowledge as constructed not in the individual vacuum, but in the communication and exchanges enabled in social networks.

Recently researchers attempted to use Facebook environment to enable collaborative learning (English & Duncan-Howell, 2008), as well as to treat content knowledge in different disciplines (Schroeder & Greenbowe, 2009; Selwyn, 2007). English and Duncan-Howell (2008) reported that preservice teachers used Facebook during their teaching practicum placements to facilitate mutual support, encouragement and the sharing of stories and anecdotes. Using Facebook enabled the preservice teachers to direct their learning through creating content, sharing and commenting on others' contributions, and by allowing them to choose from multiple forms of support. Further, Facebook environment enabled collaboration as the preservice teachers assisted each other, shared digital artifacts and exchanged constructive feedback.

Schroeder and Greenbowe (2009) describe an experiment that involved using Facebook as an additional tool for their university students' learning. They point at Facebook feature of enabling the upload of images to have an impact on their students' learning. Their students responded to comments, explanations, or observations with relevant diagrams, figures, or other graphics, while the instructors used the

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