Using Social Mindtools as a New Instructional Approach

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Through innovative uses of technology, multimedia software and other online resources, educators can make available an environment that seeks to motivate, cultivate, and meet the needs of the 21\textsuperscript{st} century learner (Belderrain, 2006). Emerging technologies such as Webspiration, Google docs, wikis, blogs along with social software applications can support a stronger learning community of students that build mastery of content and develop problem solving-skills not bound by time or place but still allow for interaction between teacher and peers (Beldarrain, 2006). The Internet has created a global community of learners that collaborate with each other even though they are not physically in the same space (Siegle, 2005). Rationale for incorporating Web 2.0 tools for students are confirmed by the ability for anyone to publish, share content and easily collaborate with others (Eckstein, 2009). With this in mind, the purpose of this action research study is to evaluate the effectiveness of using a visual learning Web 2.0 tool to foster collaboration among ninth grade geometry students in a Hawaiian private high school.

According to author, Patty Kohler, “research clearly indicates that brain activity is enhanced when we use and teach our students to represent information in a visual way” (Kohler, 2009). Other researchers who write about thinking, organizing, and communicating ideas, Nancy Marguliew, (2002), and Michael Gelb (1998), both agree that “putting ideas on paper by making maps and webs is the best match with the very nature of the way human brains work” (Dykman, 2000).

Other researchers, such as Erkens & Kirschner (2006), define cognitive tools and mindtools as an “intellectual partner that enhances the cognitive powers of the individual learner during thinking, problem solving, and learning” (Erkens & Kirschner, 2006). Because most available mindtools do not promote collaboration, several researchers (Nuutinen, Sutinen, Botha, & Kommers, 2010) have proposed a need for “social mindtools that are meant to facilitate and
scaffold shared processes of cognition in order to achieve a common goal or product in a group of community of learners” (Nuutinen, Sutinen, Botha, & Kommers, 2010).

One of the critiques of the way American math teachers teach is that there is a focus on procedural knowledge rather than conceptual knowledge. As an educator, how do I push my students beyond the memorization of processes and discrete elements so they can solve a problem understanding the mathematics, the concepts, and the real world links behind them? As a part of my ninth grade geometry course, I will develop a unit that will focus on the real life applications of trigonometry. The students will use the web to conduct their research on the principles of trigonometry and how these mathematical facts are used in various “real world” applications. In groups, the students will choose one practical application of trig and explain it to the class via a multimedia presentation. To foster collaboration, the students will use Webspiration, a visual learning Web 2.0 social mindtool which links graphics and words so that students can brainstorm ideas and create concept maps to show how pieces of information or ideas are related as well as use visual learning techniques to help organize and connect ideas and concepts. The potential of Webspiration compared to other text-oriented Web 2.0 tools, such as wikis, is this tool supports online diagramming, dynamic construction of graphic maps, and collaboration among students and teachers.

The unit will be delivered during the first five weeks at the start of the spring semester. The students will first complete both a tutorial on Internet safety and proper netiquette behavior. As collaborative groups, students will apply proven learning methods such as webbing, mindmapping, concept mapping, and graphic organizers to write and think more effectively. To evaluate this project, a reflective journal will be maintained to record student interactions, group
dynamics, and classroom observations. A survey will be administered to assess student attitudes toward using new technologies. Throughout the unit, they will take part in online discussions to examine the effects of student participation, interest, and performance as an ongoing digital record. At the end of the unit, a focus group will meet to discuss interactive and qualitative data. Simple frequency charts will be generated to display the analysis of these results. As a culminating activity, I will have a class discussion to learn how effective the visual learning Web 2.0 social mindtool, Webspiration, rated in fostering collaboration.

In summary, secondary educators are challenged with finding creative ways to keep students interested in the learning process. The intent of this action research study is to evaluate the effectiveness of using a visual learning Web 2.0 mind-mapping tool to foster collaboration among ninth grade geometry students. Technology can help build motivation but it is important that the tools used for organizing and thinking be “user friendly” and meet the need of the task and learning outcome. Mind maps allow students to imagine and explore associations between concepts; concept mapping allows students to understand the relationships between concepts. It is hoped that this instructional approach will help students to organize and structure complex information, allowing students to comprehend, create new ideas and build connections in ways meaningful to them.
References


Dykman, B. (2000). Inspiration at lafollette: a project to try out software for mapping and outlining as a way of meeting individual at all school goals. *Brain Compatible Teaching and Learning, Classroom Action Research*


