

Interactive comment on “Web 2.0 collaboration tools to support student research in hydrology – an opinion” by A. Pathirana et al.

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We thank Dr. Carsten Ullrich for reviewing this article and taking time to make a number of constructive comments.

1 Major Comments

Following are our specific remarks about the significant comments. There are three main issues we feel needs addressing:

1. Improving the literature survey to include [some of] the recent work on Wiki's in Education: We agree with the comment that there are numerous studies on using Wiki (and other Web 2.0 tools) in the field of higher-education and have included some of the significant work. However, at the same time we failed to discover any substantial work on the topic of deploying these "to facilitate research/research groups" – which, we think is a distinctly different domain of application. We plan to add the following section to the final revised paper

“There has been numerous attempts to employ wiki's in higher education – some successful, others not. Kawka (2011) reports a four-year long experience on attempting to introduce Wiki to first year university course. The author documents initial problems due to unfamiliarity of both students and the teacher with the Wiki approach. They emphasize the need of providing good ‘scaffolding’ support for the students in order for them to not to feel lost. Ebner, et al. (2008) attempted to create a wiki based on voluntary contribution. No student contributed to the wiki though many used it passively, and a subsequent survey indicated that the majority of the students saw it as a complicated, time-consuming or useless task to contribute to Wiki. They concluded that application of wiki in an educational setting is much more complicated and ‘it needs more time to develop a kind of “give-and-take” generation’. Cole (2009) reported a failed attempt to introduce Wiki into the subject matter of a third year undergraduate module in the Brunel University, UK. One of the interesting findings from this study is that the while students are willing to do passive activities online (viewing, reading), when it comes to active contribution (writing, uploading) they are reluctant due to various reasons. We discuss our experience on this point later in this paper. In the recent literature suggestions have been made in using wiki as a tool for managing research groups and (student) research projects (Sauer and Bialek, 2005, Duffy and Bruns, 2006, Parker and Chao, 2007, Li et al. 2010, among others). However, there is little empirical observations on how these work in practice in the research group/project context.”

2. The second significant issue is twofold: first, the authors' expertise seems not to lie in the area of education. Second, the failure to place our pedagogical approach in the context of today's learning theories. We assume that the first 'problem' above originates from the reviewer's observations on the manuscript regarding the second 'problem'¹. Therefore we respond to the second problem. The reviewer is correct to point out that "Theory Y" is not as well-known in education as constructivism or some of its bases like Kolb's learning styles. However, there was a good reason to select "Theory Y" as a framework for the current work. Unlike classroom education, thesis research has a strong "project flavor" to it. Many practical aspects of managing thesis research process, to a greater degree to a conduction of a number of (interrelated) projects, than to classroom education. In this context a theory originating from organizational behavior (but later adapted to education) is a good entry point. However, we will add a section describing the link to constructivism to the manuscript:

"Constructivism, a broadly accepted theory on education states that humans learn by 'constructing' knowledge in cognitive (personal process) and social (interaction with peers and teachers) domains (Powell and Kalina, 2009). Many studies have shown the benefit of Web 2.0 in the constructivist framework in classroom and distance education (Parker and Chao, 2007, Ullrich et al. 2008, Kawka 2011).

In the context of thesis research, both cognitive and social constructivism theories can play a supplementing role. The 'typical' thesis research process that includes interpreting literature and positioning it in one's own framework, planning and executing laboratory or numerical experiments, interpreting results, etc., could

¹ In case it is not, we'd like to 'disclose' that none of the three authors is a formally trained educationalist – and we don't claim to be ones. However, two authors have been involved in the business of teaching and thesis supervision in higher education for a number of years (AP: 12 years, BG: 6 years). (The third author is a graduate student who used the Wiki system presented here for his research.) We believe it is our responsibility to share our experiences with the community as practitioners in the field higher-education.

be placed somewhat in the cognitive-constructivism domain. However, these can be effectively supplemented and enhanced by activities that favour social constructivism. Examples are effective peer-communication, accessing others' knowledge and improving on them and (informal) peer-review.

While web 2.0 (as defined below) can help in both these domains (Conole, 2008), it is the social aspects of the constructivist learning that can benefit most. The area of social constructivism known as 'cooperative-learning' states that learning emerges through interaction of individuals with other individuals as individuals exercise, verify, solidify, and improve their mental models through discussion and information sharing (Lin and Hsieh, 2001). It is in this context that web 2.0 really shines. "

3. The third issue is with use of the term "PLE" (Personal learning environment). While we fully agree on the comment that "there is a difference between web 2.0 tool and a PLE" – we don't claim the Wiki (the tool) to be a PLE. Therefore we have remove instances like "Web 2.0 tools (sometimes known as PLE) far superior..." (there are several occurrences of such misleading sentences, we admit, and will remove all) However, we emphasize that our application of deploying wiki as a medium of content-development, archival and cross referencing and communication within and across groups (of various years) has many feature of a PLE.

There is no universally accepted definition of PLE: Some define it as a collection of (loosely-related) tools supporting a learning network (e.g. Harmelen, 2008). Fielder and Väljataga (2011) argue against "the prevalent tendency to base the conceptualization of PLEs almost exclusively on Web technologies (WEB 2.0) that are currently available or emerging, while underlying patterns of control and responsibility often remain untouched." Our intention in this paper is to use the term PLE rather for the conceptual framework under which we deployed the Wiki, than for the Wiki (or Web 2.0) itself. We'll add the following footnote to the revised

manuscript.

“Here we use the term PLE to refer to the conceptual framework to make the process of knowledge construction a personalized experience (Fielder and Våljataga 2011) – rather than to refer to the technology (in this case Wiki) used to attempt implementing such a system.”

2 Specific Comments

All specific comments that are not addressed below will be corrected in the revised manuscript.

Title: Agreed. We'll use singular.

Open-ended: We used the following definitions given in American Heritage dictionary

1. Not restrained by definite limits, restrictions, or structure.
2. Allowing for or adaptable to change.

This is one of the important design goals of the system and one (among others), which sets it apart from the LMS.

Why that makes it easy to maintain? Here we do not talk about technical maintenance, but rather maintaining the content. When the teacher is driving the content creation process (we think that is we use LMS like Blackboard or Moodle most of the time.) , in addition to being somewhat teacher-centred, it has the problem of burdening the teacher with a great deal of managing activities (Note that most of the 'initial' material on LMS are planned and hosted by teachers and they are responsible for managing them.) The Wiki system (as we adopted it), however,

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is almost completely driven by the students and this reduces the management burden on the teacher.

“**Vertically Integrated**” is a term burrowed from management control, that indicates rigid rules and organizational structure which gives the entity the benefit of efficient functioning at the cost of lack of flexibility (which may affect individual freedom). Mott (2010) has used the term to describe the nature of LMS.

Moodle: Why can't they express themselves freely in a forum created within Moodle? Theoretically it is possible. From a psychological viewpoint a forum is a constrained tool for free expression: You 'participate' in a platform created by someone else. It is a very different feeling from 'making something of your own'. The latter is what we do in wikis. You create your own page(s), you customize them the way you want and give it your personal style. Also from a practical point of view there are difficulties. In Moodle forums we do not have the version control. Sometimes the amount of data you can attach to a post is limited (e.g. In our research routinely students upload files of hundreds of megabytes.) due to practical considerations (This has to do with the 'vertically integrated' nature of LMS). There is also the issue of difficulty in linking students from different years in LMS – due to their 'course' based structure.

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