

Learning from Web 2.0 practices: A tool to support real-time student collaboration

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This paper describes the conceptual design of a prototype tool, currently in development, that facilitates productive collaboration in a synchronous environment. The tool could be used to bring the benefits of a tutorial to lecture and online environments. The design and development is based on successful Web 2.0 practices, and its use is considered in terms of an interpretation of Laurillard's Conversational Framework.

The outcome of the development project is a generic tool that enables a shift of some facilitation activities from a learner-teacher mode of delivery to a learner-peer supported network. Suggested uses of this tool are discussed including tasks involving analysis, synthesis and evaluation. Finally methods to integrate the tool into assessment processes are presented.

Keywords: learning communities, collaborative learning

Background

While contemporary students and teaching strategies have changed, there is much evidence that a deep approach is not taken for all students, all the time – particularly with ‘traditional’ university teaching (Biggs, 2003). With the shift to student-centred learning approaches and a move to blended learning environments, learning design needs to be informed by more contemporary approaches to teaching and supported by appropriate tools. Laurillard’s Conversational Framework is based on the premise that dialogue between students and teachers is key to reaching a shared understanding (Laurillard, 2002). The one-to-one tutorial model proposed may represent an optimal environment to foster learning as a conversation but it is not a practical option. Online communication tools provide one way to support dialogue between teachers and students, however traditional delivery approaches for lecture and online environments are still dominant forms.

Web 2.0 is a multifaceted term that describes the ‘second generation’ of web services that are becoming available online (O’Reilly, 2005). Digg.com is an example of a user-driven site based on the ideas that define Web 2.0. It provides a structure and process for an ad hoc community to quickly generate and discuss material, and come to a consensus on which contributions have value to the community. Web 2.0 services are the force behind ‘social software’ such as Wikis, which facilitate the collaboration and sharing of information, for example websites such as eBay, Wikipedia, and Flickr (Wikipedia, 2006). These technologies encourage a change in practice for structuring and selecting web content, in place of the original page metaphor (Alexander, 2006). This encourages a community to selectively participate, actively or passively, in the generation and selection of content and discussion of this process. This process is facilitated to a degree, but is mostly driven by user interest and filtering (Macgyver, 2006).

Where appropriate to the task, collaborative learning provides an alternative to traditional teaching and learning approaches, with peers supporting each other in their learning. Group work provides students with an opportunity to engage in discussion about theory and ideas, to develop a shared conception of the subject, and collaborate on the application of this knowledge. Collaboration involves interaction, verification, consolidation, improving mental models and engages critical thinking and problem solving skills to arrive at a shared outcome (Ocker & Yaverbaum, 2001). Research into the benefits of collaboration in traditional face-to-face learning environments has shown that students can experience “better performance, better motivation, higher test scores and level of achievement, development of high level thinking skills, [and] higher student satisfaction” (Cecez-Kecmanovic & Webb, 2000, p.73). Group work encourages a shift in the support and communication load from the teacher to the group, providing the learner with an opportunity to engage in a model of problem solving that better reflects the demands of the real world (Bennett, Harper & Hedberg, 2001). Students participating in online group work can

experience the benefits of face-to-face group work and these benefits can be enhanced through adequate technological support (Cecez-Kecmanovic & Webb, 2000).

This paper outlines the conceptual design of the prototype of an online tool that facilitates productive collaboration in a synchronous environment. It is based on successful Web 2.0 practices and mapped to an interpretation of Laurillard's Conversational Framework. Through rethinking pedagogical approaches for collaboration in an online environment, together with the technological approaches afforded by Web 2.0, it is hoped that this tool will encourage better framing of online collaborative activities. It aims to do this by providing students with support in tasks that encourage productive outcomes, engage higher order thinking skills, and open up the learning activity to more of the steps of the Conversational Framework.

Design

In an analysis of the design of online collaborative learning, Reeves, Herrington and Oliver (2004) reported that a major drawback of the environment is that traditional face-to-face pedagogical approaches continue to be applied. Many academics and other specialists involved with converting traditional courses into an online format do so without pedagogical change. Laurillard (2002, p. 86) argues that there are four processes that are essential for most types of academic teaching for learning. They are:

- 1 Discursive process – involving dialogue between teacher and student about their conceptions;
- 2 Adaptive process – thinking, in light of the discursive process, about the adaptations of the task goal by the teacher and adaptations of actions by the student;
- 3 Interactive process – representing activities that the teacher and student undertake within task environment;
- 4 Reflective process – reflection by both the teacher and the student on the interactive process.

Different technologies are a better platform for some of these processes than others. While online discussion forums and chat rooms can engage students in a conversation between students and teacher, and students and their peers, the successful use of these tools relates to how the learning activity is framed. This is crucial if online communication tools are intended to provide students with the opportunity to interact in an environment that encourages the development of higher order thinking skills and/or to apply their understandings (Reeves et al., 2004).

Part of the 'core' intent for Web 2.0 companies is: 'trusting users as co-developers and harnessing collective intelligence' (O'Reilly, 2005). In teaching and learning, this can be equated to valuing and supporting peer learning and assessment. Peer learning encourages students to take responsibility for their learning and deepen their understanding of the content associated with the activity (Boud et al., 1999).

The processes of collaboration (interaction, verification and reflection, and consolidation to arrive at a shared outcome) that is possible in the real-time environment of a tutorial can be mapped to the following synchronous online tools: chat, rating and group editing. However, with current tools, this typically requires multiple windows or tools to display the features: chat windows, rating controls and group productive spaces. For students, this is a complex user interface. This prototype simplifies the design into one window by reproducing the features as a sequence of steps in the collaborative process. This use of steps provides scaffolding for students through the collaboration process.

The steps in the collaborative process and the features used in each step are represented diagrammatically in figure 1. They are:

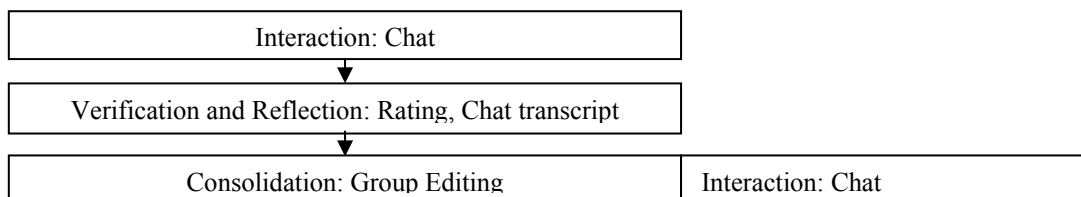


Figure 1: Collaborative process mapped to learner activity

- 1 *Interaction.* In this stage the students come to a shared definition of the learning activity and work towards the activity outcome through discussion, development, critique and defence of ideas. The step provides learners with opportunity to enhance communication, teamwork, and critical enquiry skills.
- 2 *Verification and Reflection.* The students then identify and rate the discussion entries from the chat transcript that best address the goal. This step provides learners with an opportunity to individually reflect on the group discussion. The outcome is a cumulative selection of the positively rated entries by the group for the consolidation step and a prompt to learner to reflect on the group's selection – in particular how it differs from their own selections.
- 3 *Consolidation.* The highest rated entries from the discussion are automatically added to the group edit area – representing the first draft of the activity. Students can then collaboratively consolidate their discussion into a single text and identify any outstanding questions.

Once the consolidation step has been completed the teacher reviews the document to ensure that the students are on track and addresses any questions raised as well as giving feedback. If this cannot be done immediately, it could be provided online at a later time or as part of a face-to-face tutorial. The students could then have the opportunity to make changes to their document and the document could be published for others to view. In addition to the document itself, this could include the feedback from the teacher and the activity logs.

A series of complementary activities would enable the teacher to ensure that all interactions in the following adaptation of Laurillard's Conversational Framework were met by including interactions with the group that spanned discussion both discursive and interactive processes. The adapted framework, figure 2, shows how the group takes on some of the responsibility for their learning.

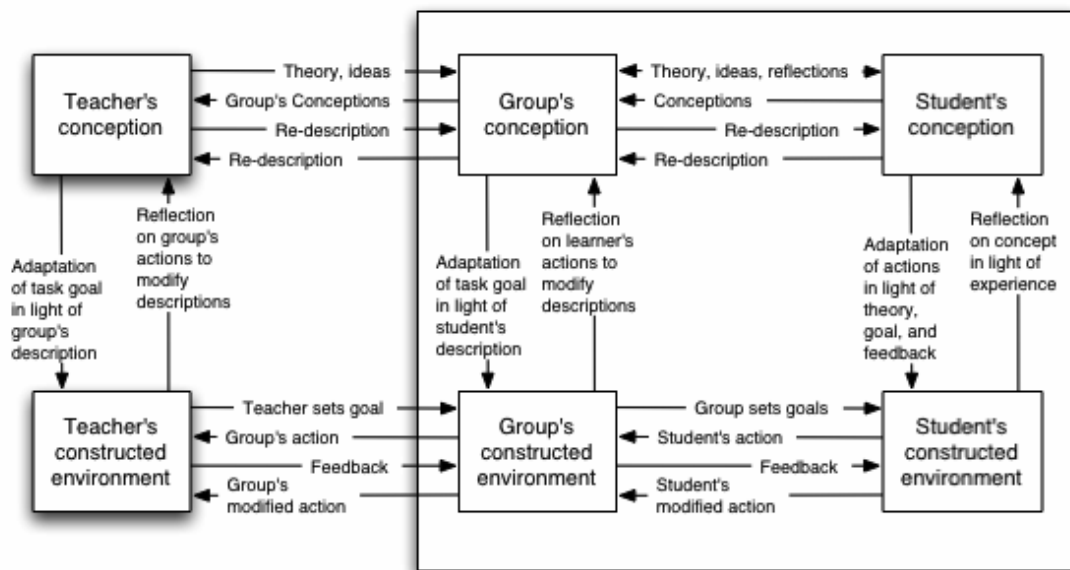


Figure 2: An adaptation of the Conversational Framework to incorporate collaborative learning

Possible applications

Three ways in which this approach could be used to support collaborative learning are:

- 1 Structured group online reflection activities responding to a streamed lecture or other media or text item (e.g. a case study video). This media could be integrated into the interface in a frameset;
- 2 A structured group-based or note taking activity used in a live lecture setting;
- 3 The tool could be used as an open-ended, idea-generation resource and questioning assistant for a group assignment.

In the first two methods, a teacher would typically plan content and a series of activities to accompany the tool, and give feedback to the students' response. Guidelines provided by the teacher for the cumulative peer assessment would provide students with some direction: e.g. 'useful point', 'interesting point', 'relevant question'; or alternatively 'include in the introduction', 'include in the body', 'include in the conclusion' etc. In the third method, the students initiate the discussion points based on their topic.

Assessment models

Assuming that the unit's objectives are measurable through the collaborative tool, (e.g. analysis, synthesis and evaluation) it may be appropriate to allocate a percentage of the unit mark to this activity. For example, the quality of the group outcomes could be marked by the facilitator at the time of contributing feedback, or after improving the document as a result of feedback given. All students would benefit by choosing the best responses via their ratings, as a higher quality group document would be the expected outcome. Alternatively, both the group document and the results of the peer-rated individual contributions could be used. This would reward students whose contributions contributed to first draft of the document, as identified by their peers, and may motivate students to contribute more thoughtfully.

Conclusion

The shift to learner centred teaching can be paralleled with the shift in focus from producers to user groups in successful Web 2.0 sites. The prototype tool under development makes use of the Web 2.0 practices that enable ad hoc networks to productively collaborate in real time. The tool provides a three-step, sequenced online activity to provide support for students engaging in a collaborative task. The process of discussion, selection, and consolidation encourages higher order thinking through idea creation and critique, reflection, and synthesis.

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