USING WIKIS AS A SUPPORT AND ASSESSMENT TOOL IN COLLABORATIVE DIGITAL GAME-BASED LEARNING ENVIRONMENTS

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ABSTRACT

In computer-supported collaborative learning (CSCL) environments, there are many researches done on collaborative learning activities; however, in game-based learning environments, more research and literature on collaborative learning activities are required. Actually, both game-based learning environments and wikis enable us to use new chances for learning, especially in collaborative learning activities.

Therefore, in this paper, related literature on wikis and how game & instructional designers can leverage from wikis in game-based learning settings for enhancing students' collaborative learning activities are examined. Based on the reviewed literature, two main suggestions are given in this paper with their underlying reasons. First, using wikis as a support tool for enhancing collaboration in digital game-based learning (DGBL) environments, and second using wikis as an assessment tool in DGBL are suggested.

Keywords: **Wikis; computer-supported collaborative learning; games; digital game-based learning; collaboration; assessment.**

INTRODUCTION

Recent researches show us that collaborative learning especially in digital settings is gaining importance because of its effect on learning. In classrooms, computer-supported collaborative learning, which means constructing new knowledge interactively in groups (Scardamalia & Bereiter, 1994; Stahl, 2006), is better than making decisions based on predefined options and existing opinions of individuals.

On the other hand, digital game-based learning environments need a social context and platform where students or players can share and co-construct their knowledge just like the idea of "communities of practice" or as Gee (2010) describes "affinity groups" or "affinity spaces". Therefore, most recently, there have been many researches on Web 2.0 technologies because of their collaborative, social, interactive, easy, and online structure. Wikis are one of them.

They are not like blogs or web pages where a person writes something and other people read it, those cannot be changed by other people. People can just make comments if the owner of that specific blog or website permits them to do.

Besides, wikis are not like forums, chat tools, or discussion boards where people write something and other people add something by writing after that as a reply and this process continue in a linear way. Wikis are the places where all people can write and edit on the same document that enables them to express their own ideas, explore new ideas, and gradually move toward a consensus (Cummings & Barton, 2008).

By this way, groups of people can study collaboratively on the same text about a specific topic (Cress & Kimmerle, 2008). Wikis provide an opportunity for students to learn collaboratively in an asynchronous environment. This unique technology provides social aspect for learning and instruction; therefore, most of the educators have been interested in using this type of technology in their classrooms to enhance collaboration, communication, and interaction in a written way; therefore, it can be said that wikis have special potential for computer-supported collaborative knowledge building and learning (Cress & Kimmerle, 2008; Yukawa, 2006).

Besides that, many researchers studying on digital game-based learning or game design may not find right assessment tools for their instructional games to assess what students learn, how they learn, and if they reach their objectives or not. As most game researchers know, even though well-designed games provide more than enough feedback and their design have a place for assessment, they might be lack in terms of assessing students learning (Egenfeldt-Nielson, 2006); because, the focus while designing the game might not always be the assessment or assessing learners' performance. Giving students a multiple-choice test at the end of the game play (Hirumi, Appelman, Rieber, & Van Eck, 2010) may not be the best solution for assessment. Portfolio assessments, for example, have been used to measure students' achievement (Barab, Thomas, Dodge, Carteaux, & Tuzun, 2005; Kebritchi & Hirumi, 2008); but, wikis have not been used as an assessment tool before in DGBL environments; therefore, it is thought that wikis might fill this gap as a new suggestion with underlying reasons.

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Collaboration & CSCL

Most recently, computer-supported collaborative learning (CSCL) is a growing trend in learning sciences and it is an underlying collaborative theory for this paper. It is basicly dealing with how students can learn together with the help of computers (Stahl et al., 2006); therefore, it focuses on the use of technology or software environment as a medium, which is supporting collaborative methods of instruction (Koschmann, 1996; Stahl, 2006; Stahl et al., 2006). As it is understood from its name, there has to be collaboration in this environment; students need to cooperate with each other, communicate with each other in a written way or orally, and gain some knowledge or learning out of this environment; however, it is not an easy job to create that type of environment and learning activity. In collaboration, learning occurs socially as a collaborative construction of knowledge; therefore, collaborative activities are not individual-learning activities, but group interaction like negotiation and sharing are important; because, the participants remain engaged with a shared task that is constructed and maintained by and for the group (Stahl, Koschmann, & Suthers, 2006).

Wikis

Computer-supported communication helps students learn during they are engaged in authentic activities with real consequences (Bruckman, 2006). Within this respect, in this paper game-based learning environments are suggested to offer authentic activity with real consequences, wikis are suggested to provide communication among students through computer-supported distributed interaction. Wikis can serve students a learning environment synchronously or asynchronously. Wiki has some features itself, as we mentioned above, it is a Web 2.0 technology enabling people to use it more easily and more interactively than a blog or a website. The WYSIWYG (What You See Is What You Get) editing feature and automatic menu construction for navigation make wikis easy to use and make changes in wiki, so you do not have to know specific web design or web language skills to design a wiki space. Wiki is a user-friendly platform; everybody can write something and save it with co-editing feature.

It is published and stored online right away.

Moreover, there is a rollback feature that students can see the previous version of the wiki if there is something to be undone or for collecting data.

Overall, when all of those features are gathered, wikis can be considered to support social constructivist learning and they can be used for enhancing group-based collaboration more than before. However, it does not mean that wikis are the best tools for enhancing collaboration because there is a limited evidence in the literature about the collaborative interactions are promoted by wiki-based learning tasks (Judd, Kennedy & Cropper, 2010).

In their study, Forte and Bruckman (2006) for example, used wikis to enhance collaborative writing and the results related with collaboration showed that students engage in more collaborative academic writing activities with the help of using wikis. In another study done by Minocha and Thomas (2007) distance course students leveraged from wiki to enhance group collaboration and the results show that wiki activities facilitated the learning of course concepts and the students' appreciation of the distributed nature of the process. More importantly, they suggested, "there is a need to support the discussion aspects of collaborative activities with more appropriate tools" (Minocha & Thomas, 2007, p.187). Related with these findings, most of the studies suggest that "wikis are not inherently collaborative and that additional components are required to promote participation and collaboration among students" (Judd, et al. 2010, p.343) which can be the digital games in this respect.

WIKIS FOR ENHANCING COLLABORATION AND ASSESSMENT IN DGBL ENVIRONMENTS

In this paper, the understanding of a person's individual knowledge is serving as a resource for other people's learning is given high importance (Kafai, 2006; Scardamalia & Bereiter, 1994). In a game-based learning environment, wikis might be useful platforms because of the fact that students can articulate their ideas in writing by building each other's knowledge. Moreover, making tacit knowledge to be explicit, articulation (Collins, 2006) is another feature of wikis and it can promote learning as well.

After playing games, students might articulate their ideas, their strategies, their tactics, and discuss/debate the issues about the game to ensure that students have the chance to articulate, negotiate, and advocate their skills and knowledge about the game. Moreover, according to the findings that Nussbaum, Winsor, Aqui, and Poliquin (2007) state,using wiki technology enhance the integration of arguments and counterarguments and foster the opinion change. Based on this finding, students might discuss their game strategies and provide suggestions to each other, by this way different strategies and techniques, that they use can be an important information for other players in his/her team during or after playing the game. When a better score is achieved by different student, he/she might update the wiki and tell his/her strategy so that they can earn more points and/or more time.

May be, some other students will advocate their strategy; just because, they might think that when it is done they way they do, it is better than the other way; therefore, they will try to create counterarguments and defend them. This might help students engage in meta-cognition process where they understand and know how they learn the process. If we remember the earlier digital games, most of them were single player games. With the advances in technology, especially with the high-speed internet, game designers started to produce games with two players, later on, they started to make use of the groups, teams, or multi-player feature where players can play online.

Games integrated with wikis, in this part, with the feature of multiple players, can help on working collaboratively or doing a task with collaboration in a given setting. The wiki is not sufficient only in itself to support the variety and range of online learning activities (Larusson & Alterman, 2009); therefore, using wiki and games can enhance interaction and collaboration among students; however, there has to be some structured activities need to be designed to engage higher-order thinking and critical reflection. Students should not be allowed to play the game and just write their ideas and thoughts about the game; it needs to be designed carefully to reflect students' ideas on specific topics and subtopics with the required scaffolding.

The wiki integrated in the game must help students reflect on their play, how they play the game, what they do...etc.; because reflection, in this sense, is a very important aspect for learning. More importantly, a student who might have problems or who might afraid to attempt intellectual activity might have chance to express his/her knowledge in this type of environment. Besides, it allows students to look back on their performance and compare their performance with previous ones and with experts (Collins, 2006), peers, and/or opponents. In her findings, Yukawa (2006, p.203) states "the simple, flexible software tools used in the course (wiki-style collaborative software and simple email and chat programs) effectively supported inquiry learning and co-reflection". By using wiki, students can also see what they have written; besides, the teacher can also show them their process and they can reflect on their learning and participation in collaborative activities. Students' texts (transcripts) can be used as an important data source for researchers to support their investigations of student participation, collaboration, and assessment as well.

Any teacher can leverage from wikis as a support tool for their structured before, during, and after game exercises and collaboration. Moreover teachers can scaffold the wiki with other materials to make it more effective collaborative learning environment. According to the findings that Larusson and Alterman (2009, p.376) found "scaffolding the wiki with project material turns the wiki structure into a mechanism that mediates and coordinates the students' cooperative work." In their study, they used example checklists, surveys, hints, and prototypes as scaffolding tools to enhance their learning. By using scaffolding, teachers can support students carrying out the tasks in order to leverage from the wiki environment in the most effective way. Also Nussbaum et al. (2007) found useful to include specific scaffolds on how to evaluate argument strength and/or to provide practice and feedback during the students are using wiki.

Stahl (2006, p.197) states that "groupware is hard to assess." Assessing and evaluating students with game play is clearly a challenge, because of its reliability and validity (it has to measure what the game is designed to teach) issues; so, it has to be designed very well in order to be fair to the students. Using wikis might be useful in this respect; just because, it is easy to follow students' ideas and thoughts thanks to the caching feature of wiki; so, the teacher can easily check each student's participation and co-construction of knowledge. If there is a guideline and a rubric that the students can follow, teachers can assess and evaluate students' active participation and constructing the knowledge process through wiki better than the traditional assessment ways like multiple-choice questions that are mentioned above.

CONCLUSION

Fulfilling a common task together, learning from peers, showing your own understanding for others to see, and co-constructing knowledge wikis can be an effective learning and assessment medium for students to increase CSCL activities before-during-after the game. Using wiki as a collaboration tool and as a support tool for DGBL environments can have a good effect on learning; however, we should keep in mind that it does not certify that all of the students will join these collaborative

learning activities and give significant amount of importance to collaboration or learning via wikis and games.

Therefore, with a good design and enough scaffolding, DGBL environments can be supported with wikis in terms of collaboration and assessment.

In this respect, more literature reviews are needed for establishing a good design of games and wikis together and empirical research is needed to see the effectiveness of wikis integrated in DGBL environments on collaboration, students' assessment, and learning. For further research, a suitable instructional game can be selected and wikis can be integrated in this game to analyze the effect of wiki-supported game-based environment on collaboration and assessment with necessary support and scaffolding.

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