Framework for Developing and Assessing Business Education Wikis

Sunil Hazari, University of West Georgia, USA

Tiffany Penland, University of West Georgia, USA

ABSTRACT

The use of Web 2.0 tools is becoming widespread in business education and educators are increasingly exploring the use of Blogs, Wikis, and Podcasts in their courses. For teaching and learning to be effective in new technology-based environments, there is a need to research and design Web 2.0 learning systems that are effective platforms for incorporating interactive tools to engage students in learning. Although Web 2.0 assignments are usually tailored to meet specific learning objectives of courses and instructions can be made available to students to address the technical nature of the environment, development and assessment of Web 2.0 assignments remains a challenge for most business educators. Using the context of wikis, this article proposes a framework for development and assessment of business education wikis to assist educators who want to explore the use of wikis in their courses.

Keywords: *Instructional Rubric, Network Pedagogy, Social Computing, Teaching Assessment, Teamwork, Web 2.0, Wiki Technology*

INTRODUCTION

Web 2.0 has attracted a lot of interest from educators, practitioners, and researchers because it takes into account human social dynamics and use of communication technology to facilitate exchange of information by using common platforms such as Blogs or Wikis. Seeking a more descriptive label for Web 2.0, some have referred to it as "social computing", "social web" or "live web", but regardless of the wording, there is a general sense among educators, technologists, and sociologists that tremendous societal shifts are underway due to rapid advances in Internet technology (Casarez, Cripe, & Weckerle, 2009). In response to calls for business schools to update their curricula and teaching methods (Campbell, Heriot, & Finney, 2006), business educators are starting to combine technical advances with research on instructional pedagogy to create and deliver interactive learning that uses collaboration, interaction, and rich media as integral features of course content.

Although Web 2.0 services such as MySpace, FaceBook YouTube, and Flickr are being used in business education, research has

DOI: 10.4018/jwltt.2010070101

lagged practice in use of these tools for learning. Baird and Fisher (2005) stated, "Social networking media engages the user in the content and allows them to be included as an active participant as they construct a learning landscape rooted in social interaction, knowledge exchange, and optimum cognitive development with their peers" (p. 24). For teaching and learning to be effective in new technology environments, there is a need to research and design Web 2.0 learning systems that are effective platforms for incorporating interactive tools to engage students in learning. Today's business students are seeking web environments that are customizable to their learning styles and needs (Roberts, 2005).

Web 2.0 technology holds good potential for enhancing business education. The use of Web 2.0 tools is increasing in business courses as educators become more familiar with the benefits of using these tools for teaching and learning. For example, the use of participatory web applications like Instant Messaging (Yammer), Podcasting tools (Gabcast and Yodio), survey tools (Google Docs), and collaboration tools (Wikispaces) can make learning interactive and meaningful. These applications allow students to engage with learning in ways that make them producers of information instead of passive recipients. Web 2.0 technology tools can also help facilitate learning by creating opportunities for students to communicate and collaborate outside the boundaries of a physical classroom. A *wiki* is an example of Web 2.0 application where users can build, edit, and develop documents based on collaborative decision making. Although wikis are available from several vendors, some features such as discussion board, history & version tracking, and formatting tools are included as part of almost all wiki spaces. It is this aspect of wiki technology that can be appealing to educators because they are able to support students groups as they build knowledge, maintain interest, excitement, and dedication to learning. Researchers have reported that Web 2.0 tools have made it possible for learners to transcend distance by using collaborative tools that are now available on devices that today's learners consider integral to their lives (Lomas, Burke, & Page, 2008; Aspden & Thorpe, 2009).

Although most business educators are familiar with concepts of assessment, teamwork, collaboration, and group processes, there is paucity of research literature focusing on application of these concepts to teaching and learning in technology and Web 2.0 learning environments. Based on integration of review of literature of above mentioned concepts along with the experience of authors in using educational wikis in business courses, a framework is presented that can assist educators and researchers develop pedagogically sound wiki assignments that have a structured assessment foundation for evaluation of teaching and learning experiences to meet educational outcomes. Application of the framework is explained by using a case study wiki assignment that was used by the authors in their courses.

ASSESSMENT CHALLENGES

Assessments are a vital component of the educational process. One of the most common uses of assessments is to assign student grades. While this is an important task for educators, it is often complicated by other factors such as individual, peer, and group assessment. In general, any course assessment should allow educators to determine and gauge the success of student learning and understanding. Technology-based instruction has additional challenges associated with course assessments. Liang and Creasy (2004) stated that the most significant challenge of online assessments is the absence of the instructor during the assessment. Olt (2002) recommended that alternate assessments must be created in learning environments where students are required to demonstrate higher order thinking skills.

Liu (2006) stated that student motivation and attitudes towards learning are increased in an environment that is enhanced through the use of technology (such as wikis). Thomas (2000) called for a new theory of learning and instruc-

tion that would provide the principles for guiding authentic inquiry, knowledge construction, and autonomous learning for students. This theory could include criteria for models for designing efficient and productive projects, shifting the responsibility to the learner, coaching without directing, and conducting performance-based assessments for instructors. As students take charge of their own learning processes and have autonomy in their learning, their educational experience can increase. This self-directed learning has a potential to increase motivation and self-efficacy in students, especially in technology-based learning environments. For instructors who are used to controlling the pace of learning, wikis can present a unique challenge. Reynard (2009) observed that control must be let go, so students can be empowered to explore and discover and to work together toward a solution. In the new Web 2.0 medium (such as use of educational wikis for instruction), educators must be willing to reengineer their instructional strategies (such as allowing students to lead discussion) when using Web 2.0 for teaching and learning.

One of the common strategies to address assessment issues is by using rubrics. Expectations for grading can be made clear by using rubrics that are specifically designed to address the nature of technology-based environments. A rubric is "a scoring guide employed to evaluate the quality of a student's responses to performance tests, a student's portfolios, or any kind of student-generated response" (Popham, 2008, p. 361). Although all rubrics serve a consistent purpose, there are different types of rubrics, such as task-specific and skill-focused. Yoshina and Harada (2007) believed that students who use rubrics are able to monitor their own progress and understand the grade they earned better than without a rubric. Effectively designed rubrics help students improve thinking and learning.

Authentic task assignments (such as wikis where students construct knowledge) are difficult to evaluate because many of the requirements are subjective. When using wikis for course assignments, instructors who create authentic task assignments must use rubrics so that they can evaluate the assignment in a clear unbiased manner. A carefully designed rubric which is based on a framework can improve an instructor's ability to assess students' level of success. Jonassen, Howland, Moore, and Marra (2003), and Auster and Wylie (2006) have proposed a rubric for assessing active learning. In the rubric they incorporated elements of learner interaction, observation, reflection, use of cognitive tools, and construction of mental models to create meaning in social and intellectual contexts. Because of the flexibility offered in collaborative wiki environments, students often make decisions concerning roles and responsibilities of each member in the group. Since the end product is result of a team effort requiring a combination of concepts and skills, rubrics have to be designed to take these different variables into account. (Information about the wiki rubric used by the authors is provided following presentation of the framework).

Regarding development of assessment criteria in technology-based learning environments, Ravitz (2000) has identified a concern which he refers to as "pedagogical divide" (p. 4). This is where instructors who are comfortable using technology are more likely to offer innovative technology-based instruction, while those who are less familiar with technology may choose routine instruction. Since this lack of pedagogical knowledge for Web 2.0 use in courses may reduce implementation and assessment of complex learning activities, characteristics of Web 2.0 environments must be studied before a framework can be proposed.

WIKI CHARACTERISTICS

Wheeler, Yeomans, & Wheeler (2008) characterize wikis as tools that allow students to collaboratively generate, edit, and synthesize information within a shared and openly accessible digital space. In terms of using collaborative tools, Elgort, Smith, and Toland (2008) cited Anderson and Krathwohl regarding the level of cognitive processing that students achieved when using a wiki. Application and synthesis

were more likely to be achieved than evaluation, meaning one could not use the "build it and they will come" mentality regarding the use of wikis (Elgort, Smith, & Toland, 2008). Wikis can be used for several different types of collaborative course assignments in the management education. Some examples are: brainstorming, peer review, electronic portfolios, case discussion, project tracking, journal article critiques, group research papers, and exam review where students add questions to the wiki.

Instructional design principles must be used to develop course assignments that use technology to assist learning. This requires faculty to have good pedagogical knowledge when choosing to use a particular technology. Anderman and Midgely (1998) also reported that students should be engaged in activities that develops their sense of competency, allows them to develop connections with others, gives them some degree of autonomy, and provides opportunities for originality and self-expression. Wikis can be used to incorporate authentic tasks in assignments. As students engage in meaningful work, these strategies can help evaluate what students have created, along with teamwork, effort, and creativity used for developing the project (Boss & Krauss, 2007). Formative assessment techniques can also be useful in providing educators with a new perspective on challenging students, and supporting their learning in a more focused way. Due to unique characteristics of wikis, not only the end product, but also the process used to develop the final deliverable must be included as part of the assessment.

With new types of customized web-based learning environments, it is necessary to determine if these environments are meeting the needs of learners. Similar to assessment of team-based projects in traditional classrooms (Willcoxson, 2006), mechanisms must also be incorporated in web-based environments to evaluate the medium, content, format, design and structure so timely intervention can occur if a problem is identified. As an example, when the first wiki assignment was given to business students by the authors, one student inquired by emailing the instructor, "*Are the grades for the Wiki assignments based on actually writing a portion of the final document and/or providing references? Or do you measure participation by involvement in the discussion and decision-making too? There are concerns about jeopardizing others' grades if their quotes or references aren't included in the final document*". Keeping such student concerns in mind, a wiki framework should incorporate performance expectations, and include consideration for both the process and product used by team members to develop the final deliverable. When using wiki technology for assignments, a significant portion of the focus should be on the process that allows students to reflect upon their knowledge. The personalized opportunity for knowledge building increases the chances for abstract learning and synthesis across different domains (such as Marketing, Finance, and Management in Business Education).

Based on research and information presented above, management education wiki framework can use several criteria such as *Content* that includes quality, originality, research, rich media resources, *Collaboration* that includes editing of peer content, collaboration, and comments in wiki discussion board; and focus on *Structure* that includes navigational hyperlinks, logical organization of material, and use of references.

WIKI FRAMEWORK

The purpose of any framework is to provide a conceptual or logical structure that represents elements of interconnecting processes for the underlying resource. For business education wikis, the Content, Collaboration, and Structure Framework shown in Figure 1 are proposed. This framework can form the basis of wiki development and assessment for instructors interested in exploring the use of wikis in business courses. Although there are many freeware and commercial wikis available (see WikiMatrix located at http://www.wikimatrix.org for assistance with wiki selection), the authors used Wikispaces

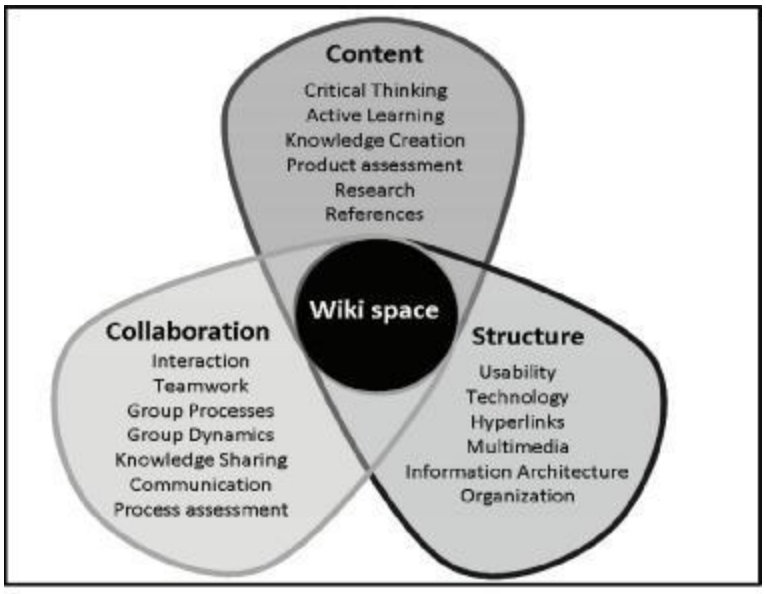
(http://www.wikispaces.com) in their courses because the user interface of Wikispaces was similar to the course management tool being used at the university. Case study assignment used by authors in context of the framework is explained along with individual components of the framework.

Content

Not all business course assignments may be suited for teamwork. Jones (1996) as cited in Snyder (2008) states, "Inappropriate use of teams can undermine the educational process so badly that learning does not take place, students learn not to learn, and students build an attitude of contempt for the learning process" (p. 80). To be fair, the content required to be developed as a team should be created by including substantial contributions of each team member. The authors took responsibility to set ground rules for interaction in the wiki. We monitored content development and provided suggestions and tips as part of formative feedback to the group since constructive feedback is a vital aspect to achieve student improvement. Andrade (2005) found that feedback can improve learning, especially when it gives students specific information about strengths and weaknesses of their work. This concept of providing support in a students' zone of proximal development has also been referred to as scaffolding in Vygotsky's theory (1986). By including assignments that encouraged deeper learning and critical analysis of the decision making process in group setting, higher order skills could be utilized. Wiki assignments were designed to encourage team development of content that were consistent with learning objectives of the course (Kreie, Headrick, & Steiner, 2007).

The case method is an effective tool for active learning in management education. It engages the student to think critically and problem solve in a group setting. Analyzing case methods promotes communication and leadership skills. Wolfer and Baker (2000), as cited in Kunselman and Johnson (2004) stated that "case studies also facilitate critical thinking by requiring students to identify principles and theories present in actual situations, thereby building analytical skills" (p. 87-88). By using a wiki environment, students can be

Figure 1. The Content, Collaboration, and Structure wiki framework



expected to analyze and discuss real-life scenarios, identify problems as well as probable solutions, and work collaboratively to decide on the solution. For example, in the Business Leadership course, a case study was assigned to students. The case dealt with problems in a Pharmaceutical company, and how the CEO confronted these problems to reestablish herself as a Transformational leader. To discuss this case, students were divided into three groups of five students per group, and instructions were given on where discussions should be started so each individual can provide their perspective based on the roles they assume in the group. A template was created by the instructor which included areas where Executive Summary, External Research, Analysis, and Recommendations for the case study could be provided. The purpose of providing this template was to have a consistent format for the purpose of comparison of analysis between groups. The principle of *cognitive conflict* was leveraged by the authors in wikis. Team members brought different opinions to the virtual table which often caused disagreement. By using previously established ground rules to address this disagreement (e.g. documenting changes with rationale in the Discussion area of the wiki), students were encouraged to improve team effectiveness and come to a consensus. For assessment purposes, along with the final content posted in the template, tracking of cognitive conflict was done by reviewing logs of student comments in the wiki space discussion forum.

Bloom's Taxonomy states that critical thinking is a higher-order skill which mainly consists of evaluating arguments. It is a purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanations of the evidential, conceptual, methodological, or contextual considerations upon which the judgment is based (Astleitner, 2002). In applying active learning principles for content development in wikis, the authors strived to create an environment where students were encouraged to participate and make learning "fun" and motivational. Schrand (2008) and Collins (2009) suggest that content development by using technology can facilitate more active student learning in the classroom, and appeal to multiple intelligences and different learning styles.

Collaboration

Payne, Monk-Turner, Smith and Sumter (2006) have stated that although students realize the importance of teamwork and collaboration, they often prefer to work individually because students perceive teamwork as requiring extra work which may have an impact on their grades because of dependence on other students. Boettcher (2009) contends that if collaboration tools are used correctly, "students develop metacognitive awareness of their own learning processes attaining autonomy; they develop competence while reviewing and contributing to other's work processes and products; and they develop a sense of relatedness within a community" (p. 22). Collaboration tools also help students focus on the learning process rather than the end product, and the tools in use today allow this process to be captured. Learning can be "seen" through the use of wikis and blogs (Boettcher, 2009), which allow for a richer learning environment and allow learners to become part of a community, a characteristic previously shown as being integral to the learning process (Vygotsky, 1978). For the case study wiki assignment, the authors initially formed groups of 6-8 students, but found that no more than five students is an optimum number for wiki teams.

Collaboration tools also allow learning to be adapted to a student's particular learning style, which can aid in comprehension and retention of new knowledge (Lomas, Burke, & Page, 2008; Aspden & Thorpe, 2009). The degree of collaboration and individual contributions was tracked by using the discussion board and page history features. To evaluate collaboration, a peer evaluation form was also used with simple questions such as an individual's contribution to the group, different perspective on what the group member could have done better to help the group, positive contribution of other individuals

in the group, and similarly what they could have done better to help the group. Students were asked to complete the peer evaluation form at the end of the assignment.

Structure

The web-based interface goes beyond static nature of paper-based environment by allowing hyperlinks, audio, video, and graphics to be embedded as an integral part of the learning space. Use of multimedia has previously been shown (Hoffman & Novak, 1996; Agarwal & Karahanna, 2000) to improve cognitive engagement and cognitive absorption in users. Multimedia can also be used to "encourage student participation in learning tasks and that appeal to multiple intelligences and learning styles" (Schrand, 2008, p. 80). Technology-assisted presentations (such as PowerPoint) and video (such as YouTube clips) are widely recognized as effective pedagogical techniques in management education (Tyler, Anderson, & Tyler, 2009). While presentations of this type provide an opportunity to easily create and integrate media-rich elements (such as audio and video), a deeper understanding of instructional design principles that also incorporate learning theories is needed to develop pedagogically sound materials that address different learning styles of an audience, and to effectively meet learner goals and outcomes. Use of YouTube video clips and podcasts was encouraged as this created a media-rich environment where students could absorb and retain information more readily since the information was associated with variety of stimuli.

Regarding the need for technology skills to structure web-based wiki content developed by students, some students may have previous experience in interacting with community participants in social networking sites (such as FaceBook). Knowledge of HTML coding which was previously required to develop web pages is no longer needed in Web 2.0 wiki environments since the graphical user interface of wikis makes formatting text easy by using different typestyles, fonts, highlights and colors. Web usability, which refers to ease of navigation and efficiency of task accomplishment to achieve learning objectives, is necessary for accessing and understanding information. According to Nielsen (2000), the overall design of a website should involve five different levels that include: feature design, information architecture (structure design), interaction design, appearance design (visual design), and content design. Since students may not be well-versed with usability and information architecture issues, instructors can present models of formatting styles expected for the completed assignment. For the case study assignment, the authors provided student groups with a wiki that was pre-populated with headings such as Member names, Executive Summary, Introduction, Key issues, Analysis, Recommendation, Conclusion etc. This encouraged students to focus more on substantive information creation rather than emphasizing mostly stylistic presentation.

For effective learning to occur and personalized knowledge to be created, instructional strategies must be carefully aligned with educational objectives. Design of instructional material in a wiki needs to be structured within the context of elements available for use in the web-based environment. This can be achieved by using principles of instructional design. Instructional design is the use of learning theories to systematically develop of instructional materials that ensure the quality of instruction. It is also the process of analyzing learning needs and goals, and the development of a delivery system to meet those needs (Kemp, 1985). By using sound instructional design principles, the level of student interaction when completing a task in a common wiki space where they can track each other's work as they collaborate, question, and explain their results can make for an effective learning platform. By using instructional design principles, wikis can be designed to integrate range of formats that include hyperlinks, graphics, audio, and video (e.g., YouTube). For example, in the case study assignment, students' embedded YouTube videos that they found were relevant to the case since it added value to the wiki document.

FINDINGS AND RECOMMENDATIONS

Based on the Wiki framework presented above, the authors' implemented wiki based instruction in several courses. The different types of assignments used by the authors for wikis included project report, journal article critiques, case studies, management consultant reports, and small group brainstorming exercises. Initially, when the authors were learning to implement wikis as an instructional tool, several issues (such as group size, assignment of roles, individual versus group communication expectations) created problems in smooth functioning of wiki assignment. These concerns were addressed by the authors in subsequent wiki assignments. The most important factor for wiki instruction to be successful was found to be number of students in each group and dynamics of group interaction. The authors recommend that no more than five students be placed in each wiki group.

The wiki rubric used by the authors was based on components of the framework explained previously. When assigning grades, all three components (Content, Collaboration, and Structure) of the framework were included. When evaluating the wiki document, the authors took into account both the process as well as the product of the wiki document. Criteria review included items such as knowledge creation, quality of sources used, regular student participation, engagement, dialog, community building, presentation of innovative ideas, depth of research/experience shared in the wiki, leadership roles and responsibilities exhibited by the student, constructive comments provided by students during peer editing, organization of the final document including format, style, grammar, web links, and use of external media in the wiki. Realizing that management educators can use wikis for different types of course assignments, the above criteria along with the components of the framework can be used by management educators to develop individualized rubric that meets learning objectives of their course.

When wiki assignments were first used in courses, student feedback on use of wikis was mixed. This could be attributed to the novelty effect. There were concerns about roles, expectations, and group interaction. A sample comment emailed to the instructor by a frustrated student is stated: "*I had a terrible time working with the group members on wiki this week. A member of the group edited my post without my permission and moved in a place where I thought it should not be. I moved it back twice, and she moved it again. We fought about minor things such as: deadlines, citing the reference in correct format, font style and size, and late students dropping information in the detailed analysis section and leaving. They really didn't care if the information flowed or not. In our next project if you can let the students know that it is a group effort and "not my way or the highway" effort. Things will be much better. Thank you*". This underscored the need to provide a clear rubric.

Based on general guidelines for participation in environments such as course discussion boards, specific rubrics in assessing online participation, communication, and content have previously been documented (e.g., Gant, 2007; Hazari, 2008). As student concerns were addressed, a modified rubric was provided, and students became more familiar with interaction in wikis, the comments were mostly positive. Table 1 provides a summary of comments based on experience of the authors in using wikis in several courses.

The above table should provide helpful information to instructors contemplating Web 2.0 tools in their courses. Other than wikis, active learning can be also be used in environments such as blogs that were mentioned earlier. Wiki assignments typically use a collaborative model of learning. The use of active learning by incorporating cooperative and collaborative team assignments has been widely recognized as an effective method of instruction in higher education (Johnson, Johnson, & Smith, 1998; Wilson, Goodman, & Cronin, 2007). Wikis present a unique challenge because they

Table 1. Pros and cons of using Wikis

Pros:
• Introduces variety and exposes students to different instructional strategy
• Innovative way of doing group assignments
• Provides opportunities for leadership
• Encourages collaboration
• Individual's thought process can be seen in Discussion area
• Interface is user friendly and does not take time to learn
• History feature is useful in identifying procrastinators
Cons:
• Coordination among students is difficult
• Learning can become scattered and frustrating
• Anyone can make changes in the wiki
• Asynchronous mode (i.e., no immediate response to changes)
• Lack of individual's control on grades because it is a group effort
• Does not suit all learning styles esp. if student prefers individual projects
• Benefits may not be worth the added learning and technical challenges

rely on collaboration and group dynamics. Because of complexities involved in designing and implementing group assignments, researchers (Feichtner & Davis, 1985; Fisher, Shaw, & Ryder, 1994; Phipps, Phipps, Kask, & Higgins, 2001) have identified problems in using group work as an effective instructional strategy. Some of this is because of inherent conflict in group settings that are related to different expectations, students' learning styles, and challenges related to reaching consensus on information and content presentation. However, this may be alleviated by using moderated group discussions where the instructor has better control in guiding the group. An example of this is the use of discussion boards that can be found in traditional course management systems such as WebCT and Moodle. Where effective group work may not possible (such as in completely online courses), instructors should consider using alternate environments (such as blogs) which provide a platform for individual observation, reflection, presentation, and discussion of ideas. In blogs, the individual setting up the blog is responsible for flow of ideas by having the option to moderate discussions (i.e., approve posts for the blog). In blogs, knowledge is presented in a social context, using learning as a shared process between individuals interacting in the blog. In contrast to wikis which use a collaborative model, blogs typically use a cooperative model of learning.

Irrespective of the learning environment, faculty members should clearly communicate the objectives for each assignment, and explain how the Web 2.0 related assignment may be different from other assignments that students may have previously completed during the term. Faculty members must also provide flexibility and allow students to take risks, make mistakes, and learn from those mistakes. For an instructional strategy to be effective, it is necessary for an instructor to be comfortable using the technology in order to leverage it effectively as a teaching tool. The technology should add value, have a clear advantage, be compatible with existing systems in the course, and be targeted to address learning outcomes of the course.

CONCLUSION

This paper provided a framework for teaching with wikis, and discussed the role of an instructor, facilitation, collaboration, and assessment issues when using wikis as a teaching tool in courses. In traditional (face-to-face) learning, Kolb (1984) has shown that students prefer to learn in an environment that reflects their cognitive style in which they are most comfortable,

and also when the instructional method used for teaching matches the student's learning style (Gordon, 1995). The use of scaffolding, which is defined as support provided by a teacher, peer, or other resource (McLoughlin &. Oliver, 1998), can also enable students to perform tasks that they cannot perform individually, and increase student motivation towards learning when working in a collaborative (Web 2.0) environment. For the millennial learners, Proserpio and Gioia (2007) advocate the use of active learning facilitated by social activities and interaction. Therefore, educators who use technology and feel comfortable with its application should seek to develop assignments that are challenging, motivating, and those that develop critical thinking skills in a constructivist environment (Auster & Kylie, 2006). Wiki assignments should be created to meet learner goals and course outcomes. While not all higher order skills may be assessed in wiki environments, based on the taxonomy of learning, teaching, and addressing (Anderson & Krathwohl, 2001), wikis may be best suited for application, synthesis, and evaluation of knowledge (e.g., case study discussion presented in this paper). The use of the wiki platforms can facilitate this process by allowing management educators to support individual needs and extend learning to group settings. The value of technology to the students' development should be effective and motivational. As students expectations are being geared towards multi-sensory application of audio and video learning formats that go well beyond capabilities of conventional textbooks, business educators can leverage Web 2.0 technologies to encourage collaborative learning. With new technology being rapidly developed and adapted for use in education, more research is needed that studies application of instructional design principles in technology-based learning environments.

Konieczny (2007) believes that wikis are one the best tools to emerge for teaching and learning over the past few years. They are easy to use, bring a new dimension to teaching and learning, and are freely available for educators to experiment in their courses. Wikis offer an opportunity for students to be involved with collaborative creativity which can prepare students to make innovative use of collaborative software tools (Parker & Chao, 2007) that are being used by businesses today. As new media has been accepted in business education (Tyler, Anderson, & Tyler, 2009), there is a need to teach students social networking literacy as part of the business curriculum. Since research on business education wikis is limited, a framework such as the one presented in this paper, will assist educators in developing pedagogically sound educational wikis for course assignments. Other disciplines can also benefit by using principles outlined in this framework. By using a framework that incorporates content knowledge, research skills, collaborative efforts, and instructional design, educators can create multiple opportunities for assessment that allows for instruction where all learners can be successful. By giving students autonomy over their learning, they are more likely to make meaningful connections in course content and peer interaction. Use of the framework can guide instructors to develop individualized rubrics that monitor student learning. Wikis can empower students by changing their behavior from individual learning to focus on collaborative processes. It is now up to educators to learn, understand, model, and implement Web 2.0 technologies that can enhance critical thinking, problem solving, collaborative communication, and creativity skills, so students can be better prepared to collaborate and compete in a highly technological global economy.

REFERENCES

Agarwal, R., & Karahanna, B. (2000). Time flies when you are having fun: Cognitive absorption and beliefs about information technology usage. *Management Information Systems Quarterly*, *24*, 665–694. doi:10.2307/3250951

Anderman, L. H., & Midgley, C. (1998). *Motivation and middle school students (ERIC digest)*. Champaign, IL: ERIC.

Anderson, L. W., & Krathwohl, R. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of education objectives*. New York: Longman.

Andrade, H. G. (2005). Teaching with Rubrics: The Good, The Bad, and The Ugly. *College Teaching*, *53*(1), 27–30. doi:10.3200/CTCH.53.1.27-31

Aspden, E. J., & Thorpe, L. P. (2009). Where do you learn?: Tweeting to inform learning space development. *EDUCAUSE Quarterly*, 32(1). Retrieved August 21, 2009, from http://www.educause.edu/EDUCAUSE+Quarterly/EDUCAUSEQuarterlyMagazineVolum/WhereDoYouLearnTweetingtoInfor/163852

Astleitner, H. (2002). Teaching critical thinking online. *Journal of Instructional Psychology*, *29*(2).

Auster, E., & Wylie, K. (2006). Creating Active learning in the classroom: A systematic approach. *Journal of Management Education*, *30*(2), 333–353. doi:10.1177/1052562905283346

Baird, D., & Fisher, M. (2005). Neomillennial user experience design strategies: utilizing social networking media to support always on learning styles. *Journal of Educational Technology Systems*, *34*(1), 5–32. doi:10.2190/6WMW-47L0-M81Q-12G1

Boettcher, J. V. (2009). Have we arrived? *Campus Technology*, *22*(8), 20–22.

Boss, S., & Krauss, J. (2007). *Reinventing project-based learning: Your guide to real-world projects in the digital age*. Oregon: International Society for Technology in Education.

Campbell, N., Heriot, K., & Finney, R. Z. (2006). In defense of silos: an argument against the integrative undergraduate business curriculum. *Journal of Management Education*, *30*(2), 316–332. doi:10.1177/1052562905277231

Casarez, V., Cripe, B., & Weckerle, P. (2009). Using the New Collaborative Technologies to Lead Business Transformation . In *Reshaping Your Business With Web 2.0* (p. 1). New York: Mcgraw-Hill/Osborne.

Collins, R. A. (2009). The role of learning styles and technology. *International Journal of Web-Based Learning and Teaching Technologies*, *4*(4), 50–65.

Elgort, I., Smith, A. G., & Toland, J. (2008). Is wiki an effective platform for group course work? *Australasian Journal of Educational Technology*, *24*(2), 195–210.

Feichtner, S., & Davis, E. (1985). Why some groups fail: Survey of students' experiences with learning groups. *Organizational Behavior Teaching Review*, *9*(4), 58–73.

Fisher, C. D., Shaw, J. B., & Ryder, P. (1994). Problems in project groups: An anticipatory case study. *Journal of Management Education*, *18*, 351–355. doi:10.1177/105256299401800307

Gant, C. (2007). Assessing asynchronous discussions: An exploratory hybrid model. *Online Journal of Distance Learning Administration*. Retrieved September 14, 2009, from http://www.westga.edu/~distance/ojdla/fall103/gant103.htm

Gordon, H. R. (1995). *Description of productivity and learning style preferences of on-and-off-campus distance education participants of Jefferson University* (ERIC Document Reproduction Service No. 390 308).

Hazari, S. (2008). *Discussion group participation criteria*. Retrieved October 21, 2009, from http://www.sunilhazari.com/education/courses/discussioncriteria.htm

Hoffman, D. L., & Novak, T. P. (1996). Marketing in hypermedia computer-mediated environments: Conceptual foundations. *Journal of Marketing*, *60*, 50–68. doi:10.2307/1251841

Johnson, D. W., Johnson, R. T., & Smith, K. A. (1998). Cooperative learning returns to college: What evidence is there that it works? *Change*, *30*(4), 27–35. doi:10.1080/00091389809602629

Jonassen, D. H., Howland, J., Moore, J., & Marra, R. M. (2003). *Learning to solve problems with technology: A constructivist perspective*. Upper Saddle River, NJ: Pearson Education.

Kemp, J. (1985). *The instructional design process*. New York: Harper & Row.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Upper Saddle River, NJ: Prentice Hall.

Konieczny, P. (2007). *Wikis and wikipedia as a teaching tool*. Retrieved December 11, 2009, from http://www.itdl.org/Journal/Jan_07/article02.htm

Kreie, J., Headrick, R. W., & Steiner, R. (2007). Using team learning to improve student retention. *College Teaching*, *55*(2), 51–56. doi:10.3200/CTCH.55.2.51-56

Kunselman, J., & Johnson, K. A. (2004). Using the case method to facilitate learning. *College Teaching*, *52*(3), 87–92. doi:10.3200/CTCH.52.3.87-92

Liang, X., & Creasy, K. (2004). Classroom Assessment in Web-based Instructional Environment: Instructors' Experience. *Practical Assessment, Research & Evaluation, 9*(7). Retrieved November 5, 2009, from http://PAREonline.net/getvn.asp?v=9&n=7

Liu, M. (2006). The effect of a hypermedia learning environment on middle school students' motivation, attitude, and science knowledge. *Computers in the Schools*, *22*(3), 159–171. doi:10.1300/J025v22n03_13

Lomas, C., Burke, M., & Page, C. L. (2008). *Collaboration Tools*. Washington, DC: EDUCAUSE.

McLoughlin, C., & Oliver, R. (1998). Scaffolding higher order thinking in a telelearning environment. In T. Ottman & I. Tomek (Eds), *Proceedings of Ed-Media/Ed-telecom 98 World Conference on Educational Multmedia and Hypermedia* (pp. 977-983). Charlottesville, VA: AACE.

Nielsen, J. (2000). *Designing web usability: The practice of simplicity* (2nd ed.). Indianapolis, IN: New Riders Press.

Olt, M. R. (2002). Ethics and Distance Education: Strategies for Minimizing Academic Dishonesty in Online Assesment. *Online Journal of Distance Learning Administration, 5*(3). Retrieved June 4, 2009, from http://www.westga.edu/~distance/ojdla/fall53/olt53.html

Parker, K. R., & Chao, J. T. (2007). Wiki as a teaching tool. *Interdisciplinary Journal of Knowledge and Learning Objects*, *3*, 57–72.

Payne, B. K., Monk-Turner, E., Smith, D., & Sumter, M. (2006). Improving group work: Voices of students. *Education*, *126*(3), 441–448.

Phipps, M., Phipps, C., Kask, S., & Higgins, S. (2001). University students' perceptions of cooperative learning: Implications for administrators and instructors. *Journal of Experiential Education*, *24*(1), 14–21.

Popham, W. J. (2008). *Classroom Assessment: What Teachers Need to Know* (5th ed.). Upper Saddle River, NJ: Pearson Education, Inc.

Proserpio, L., & Gioia, D. A. (2007). Teaching the virtual generation. *Academy of Management Learning & Education*, *6*, 69–80.

Ravitz, J. (2000). *Technology to support ongoing formative assessment in the classroom* (pp. 1-13) (Tech. Rep.). Berkeley, CA: Center for innovative learning technologies.

Reynard, R. (2009, April). 3 challenges to wiki use in instruction. *Technological Horizons in Education*. Retrieved August 3, 2009, from http://www.thejournal.com/articles/24206

Roberts, G. (2005). Technology and learning expectations of the net generation . In Oblinger, D. G., & Oblinger, J. L. (Eds.), *Educating the net generation* (pp. 3.1–3.7). Boulder, CO: EduCause.

Schrand, T. (2008). Tapping into active learning and multiple intelligences with interactive multimedia: a low-threshold classroom approach. *College Teaching*, *56*(2), 78–84. doi:10.3200/CTCH.56.2.78-84

Snyder, L. G. (2008). The use of pre-group instruction to improve student collaboration. In *Proceedings of the Delta Pi Epsilon conference*, Chicago (pp. 65-69).

Thomas, D. (2000). *Writing Partnerships: Service-Learning in Composition* (Eric Document No. ED445338). Retrieved October 29, 2009, from http://eric.ed.gov

Tyler, C. L., Anderson, M. H., & Tyler, J. M. (2009). *Giving students new eyes: The benefits of having students find media clips to illustrate management concepts* (Vol. 33, No. 4, pp. 444-461).

Vygotsky, L. (1978). *Mind in Society*. Cambridge, MA: Harvard University Press.

Vygotsky, L. (1986). *Thought and language*. Cambridge, MA: MIT Press.

Wheeler, S., Yeomans, P., & Wheeler, D. (2008). The good, the bad and the wiki: Evaluating student-generated content for collaborative learning. *British Journal of Educational Technology*, *39*(6), 987–995. doi:10.1111/j.1467-8535.2007.00799.x

Willcoxson, L. (2006). "It's not fair": Assessing the dynamics and resourcing of teamwork. *Journal of Management Education*, *30*(6), 798–808. doi:10.1177/1052562906287964

Wilson, J. M., Goodman, P. S., & Cronin, M. A. (2007). Group learning. *Academy of Management Review*, *32*(4), 1041–1059.

Yoshina, J. M., & Harada, V. H. (2007). Involving Students in Learning Through Rubrics. *Library Media Connection*, *25*(5), 10–14.

Sunil Hazari is an Associate Professor in the Richards College of Business, University of West Georgia. His teaching and research interests are in the areas of Business Education, Information Security, Web Usability, and Web 2.0 applications. He has authored several peer-reviewed journal publications in Information and Instructional Technology areas, has presented papers at regional and national conferences, and is editorial board member of several information system journals. Website: http://www.sunilhazari.com/education

Tiffany Penland is a Business Education teacher at Lithia Springs High school where she also serves as the department head of the Architecture, Business, Engineering, Marketing and Recovery programs. Ms. Penland also serves on the Leadership Team, PTA arts and craft board, and the Business and Computer Science, and Information Technology Advisory Committees. Ms. Penland is enrolled in a Specialist degree program in Educational Leadership at the Georgia College and State University.