

Do Web 2.0 Applications Enhance Learning in Teacher Education in the UAE? An Exploratory Study

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Abstract: This study investigated pre-service teachers' perceptions towards using blog and wiki applications to enhance their learning. It also examined pre-service teachers' perceptions towards the application that is more effective in their learning. The pre-service teachers' suggestions of other web 2.0 applications that can be used to promote learning were also explored in this study. For the purpose of this study, data was collected from 15 pre-services teachers using semi-structured interviews and the analysis of their postings on the blog and wiki platforms. The results revealed that participants perceived blog and wiki as powerful tools to enhance their learning. However, the majority of participants reported that the blog is more effective in learning than the wiki. Further, the study results showed that participants suggested several applications that can be powerful in enhancing learning such as Google Docs, Podcasts, and online forums. The findings of the study were discussed and recommendations for effective use of web 2.0 applications were made.

Key Words: Web 2.0, blog, wiki, learning, pre-service teachers.

Introduction

Web 2.0 applications refer to the social use of the second generation of web technologies which allow people to collaborate, improve content, create knowledge and share information. These technologies include blogs, wikis, media sharing, social networks and podcasts (Master Base, 2010). The major advantages of such applications are their ease of use, rapidity of deployment, availability, individual affordability, powerful information sharing, and straightforward collaboration (Alexander & Levine, 2008; Boulos, Maramba & Wheeler, 2006). Consequently, interest in the integration of web 2.0 technologies in education has been growing rapidly. Many educators suggest that these applications should be integrated into education as they have the potential to promote active involvement among students who would be

driven to the knowledge construction process, and to develop their critical thinking or deep learning through applied and reflective activities (Bransford, Brown & Cocking, 2000; Driscoll, 2002; Karl & James, 2006).

The research literature related to the use of web 2.0 applications such as blog and wiki technologies in education revealed conflicting views. In one hand, many studies revealed that the integration of blog and wiki has positive impact on teaching and learning through allowing teachers to actively involve learners in their own creation of knowledge. (Boulos, Maramba & Wheeler, 2006; Hiltz & Goldman, 2005). According to Jonassen, Peck, and Wilson (1999), these tools offer a variety of unique and powerful information sharing and collaboration opportunities, act as cognitive reflection and amplification tools, and aid the construction of meaning through the act of self-design of knowledge databases. The Blog and wiki in particular help to realize the original vision of the web as a space in which anyone can participate (Schaffert, Gruber, & Westenthaler, 2006). On the other hand, other studies reported that integrating blog and wiki applications into teaching and learning contexts has failed to motivate students to participate in the learning process (Cann, Calvert, Masse, & Moffat, 2006; Chan & Ridgway, 2006; Divitini, Haugalokken, & Morken, 2005; Zurita, 2006). Cann et al., (2006), for example, described an instance where students did not want to participate in the Web 2.0 applications due to having a perception that these methods of technology were frivolous activities and not substantial activities to be assessed. Moreover, the literature is limited in explaining whether certain applications can be used more effectively in one discipline over the other.

Therefore, this study is set to examine the value of using blog and wiki applications in teacher education program in UAE from the point of view of pre-service teachers and to investigate other web 2.0 applications that can promote students' learning.

Use of Blog and Wiki Applications in Learning

The term weblog, commonly referred to as a blog is an online journal that displays chronological collection of personal comments and links in an informal style. It is a type of asynchronous communication tool that is easy to create and use (Campbell, 2003). According to Walker (2003), a blog is a frequently updated website consisting of dated

entries arranged in reverse chronological order allowing the reader to view the most recent post first.

The accelerating popularity of blog technology among young people has encouraged many educators to integrate this tool at university courses to facilitate communication and collaboration among students (Halic, Lee, Paulus, & Spence, 2010). It is considered as an effective replacement for all computer-mediated communication (CMC) applications (Kim, 2008). Blog technology provides many advantages over other web 2.0 applications including; easily creating new web pages; content filtering of blog entries; providing personal writing space that is usable, sharable, and automatically archived; viewing related links; serving as a digital portfolio of students' assignments and achievements; instant publishing to the web without learning HTML or use a web authoring program; and extending into fully featured content management systems (Duffy & Bruns, 2006).

The blog can be used by educators and students alike. Educators can use blog to give extra guidance, information and explanation about the course topics, follow their students learning process, and identify the problems, difficulties and challenges students face. On the other hand, students can use blog as a learning platform to reflect on the teaching and learning experiences, interact, share and acquire new knowledge (Namwar & Rastgoo, 2008)

The theory of blogging instruction is based on constructivism, where learning is constructed by students not transmitted by teachers (Ku, 2007). According to Richardson (2004), blogging provides students with a variety of learning opportunities that may be difficult to take place in the traditional classes. It offers them a chance to: a) reflect on what they are writing and thinking, b) write about a topic over a sustained period of time, c) engage readers and audience in a sustained conversation that leads to further writing and thinking, and d) synthesize disparate learning experiences and understand their collective relationships and relevance.

In term of studying the use of blog in teacher education, Wang, Hsu and McPherson (2006) investigated the effects of blogging on pre-service teachers' awareness of diversity in a literacy/reading context and

sharing experiences of facilitating the collaborative contributions of blog. Quantitative and qualitative data collected from 24 pre-service teachers revealed that blogging: (1) allows sharing of knowledge and experiences as well as expressing feelings and thoughts, (2) enables awareness of peers' opinions and confronting perspectives, (3) facilitates and deepens reflective practices, (4) bridges the disconnection between theory and practice, and (5) provides a learning environment with no restraint on time to think over the discussion topics compared to in-class discussion (Wang, Hsu & McPherson, 2006).

Another study conducted by Yang (2009) explored the use of blog as a reflective platform in the training processes of English as a Foreign Language (EFL). The data consisted of 43 pre-service teachers' postings, surveys, and group reflective dialogues recorded by instructors in class meetings. The results showed that the participants considered blog as a useful platform that allows them to actively discuss teaching theories and their implications.

With regard to the term wiki, it is adopted from the Hawaiian language, where 'wiki wiki' means 'quick'. It is a collaborative website whose content can be easily edited by visitors (Chao, 2007). Actually, a wiki is a simple way of creating web pages in combination with a system that records each individual change that occurs over time. It is a way to build and exchange information through collaborative effort. While some wikis allow anyone to both edit and view content, others restrict the editing to a group of members, and allow everyone to view it (Parker & Chao, 2007).

The educational wiki gives students a choice to add, modify, or delete information by simply clicking the "edit this page" link. Each student can edit the text and submit a new version, which will immediately replace the old one on the website (Aronsson, 2002). Wiki technology may also support tracking of edits or updates, which is useful for educators to monitor all updates and assess students' participation (Augar, Raitman & Zhou, 2004).

The wiki can be used as a source of information, as well as a tool for collaborative authoring (Boulos, Maramba & Wheeler, 2006). More specifically, Duffy and Bruns (2006) list several possible educational uses of wiki including:

- Developing research projects where wiki serves as ongoing documentation of students' work.

- Adding summaries of students' thoughts from the prescribed readings and building a collaborative bibliography.
- Publishing course materials like syllabus and handouts, on which students can edit and comment.
- Using it as a knowledge base for teachers, enabling them to share reflections and thoughts regarding their teaching practices, and allowing versioning and documentation.
- Giving a suitable working environment to facilitate presentation instead of conventional software, like Keynote and PowerPoint, which allows students to directly comment on and revise the presentation content.
- Using it for group authoring to enable group members build and edit the document on a single wiki page, where group members collaborate on a document by emailing it to all members so that each edits on his computer, making the edits equally represented. Using wiki pulls the group members together and,
- Evaluating courses, using wiki collaboratively by students to write reviews of courses.

Research literature has examined the impact of wiki on teaching and learning in teacher education programs. For example, O'Shea, Baker, Allen, Curry-Corcoran, and Allen (2006) conducted a study in an undergraduate, first-year education course regarding the use of wiki as part of course assignments. Despite the fact that students reported initial hesitation at learning a new technology application, their overall experience using the wiki was positive. Canole, de Laat, Dillon, and Darby (2006), on the other hand, found that the implementation of wiki helped undergraduate students to develop new forms of evaluation skills that enabled them to critique and make decisions regarding new content. In a more recent study, *Deters, Cuthrell and Stapleton (2010)* examined students' perceptions regarding the use of wiki in education methods courses and their perceptions regarding potential uses of wiki in the K-12 classroom. Participants in the study (n=40) stated that their overall experience with wiki was positive, and they perceived strengths of wiki technology including potential collaboration, information dissemination, application in elementary classrooms, and ease of use.

Blog vs. Wiki

Comparing blog with wiki, a number of significant differences were mentioned by (Duffy & Bruns, 2006; Parker & Chao, 2007; Woolf, 2006). The following table shows these differences:

Table 1:
Differences between Wiki and Blog

Wiki	Blog
- Wiki is mainly designed for collaborative authoring by users	- Blog is more personal and generally written by a single author.
- Wiki typically organizes information into topics making wiki a highly flexible knowledge management space.	- Blog organizes information in reverse chronological order making information more of a historical record and rarely changes.
- Wiki shows what information is related and makes it easy to browse and find all related postings on a particular topic.	- Blog shows information in reverse chronological order making it difficult to browse and find all related postings on a particular topic.
- Wiki allows users to directly edit the content.	- Blog content belongs to the owner with a mechanism for readers' comments
- Wiki is recommended when information is intended to be modified and developed as part of a collaborative effort.	- Blog is a recommended communication tool for disseminating information to people and for receiving feedback without changing the original text.

In an exploratory study, Castaneda, Ahern, and Diaz (2011) investigated the influence of blog and wiki on the students' performance when learning the preterit and the imperfect aspects in Spanish. The study was conducted in two classes with a total of 52 undergraduate students of intermediate Spanish divided to 27 students in the blog group and 25 in the wiki group. The use of blog and wiki was supplementary to the traditional classroom environment. The results indicated that: 1) there were no significant differences between students who used blog or wiki technology on performance levels when controlling pre-existing knowledge, 2) there were no significant differences in satisfaction levels between students who used a wiki and those who used a blog. The researchers suggest that wiki and blog are good potential tools that may facilitate the teaching and learning of problematic grammar structures in a narrative context.

In her attempt to investigate the impact and effectiveness of web 2.0 applications (i.e. blog and wiki) to support innovative approaches to Information System assessment tasks in large classes. Alam (2008) reflected on the process of integrating web 2.0 applications into the teaching syllabus for assessment purposes and presents a reflective account of the outcomes of the trial from both student and staff perspectives. This analysis confirms the importance of usability,

workload and 'fit for task' for successful technology integration into large classes.

In another study, Kumar (2009) sought to identify Web 2.0 applications that were more suited to certain disciplines over others in on-campus courses from the undergraduate perspective. Focus groups were conducted with 21 students from different disciplines. The findings revealed that Participants highlighted the usefulness of certain Web 2.0 applications over others for their respective disciplines. In addition, online discussions or blogs, audio or video podcasts of classroom lectures, and Google Documents were found to be the most useful technologies across disciplines.

Blog and wiki could lead to pedagogical innovations for teaching and learning. However, it would not be easy to embed such applications within higher education practice (Collis & Moonen, 2008). In this regard, Zurita (2006) found inconsistencies in positive feedback regarding the use of Web 2.0 applications. These inconsistencies were related to problems with using the technology to design learning resources, problems in the pedagogy used by the instructor for managing the group work involved, and problems in the expectations of the students themselves. Up to this moment, many students are prepared and are more comfortable with a teacher-centered course than a learner-centered course in which they are expected to create learning materials for themselves and their peers. Accordingly, to increase the success of this embedding, support should be provided so students will be aware of what is expected in the use of these technologies and instructors know how to best utilize them (Collis & Moonen, 2008).

Statement of the Problem

Blog and wiki are new technologies that have attracted increasing interest among educators and researchers. However, there is no consistent evidence regarding their impact on teaching and learning. While many studies revealed that the integration of blog and wiki has the potential to improve teaching and learning (Boulos, Maramba & Wheeler, 2006; Deters, Cuthrell & Stapleton, 2010; Hiltz & Goldman, 2005; Schaffert, Gruber, & Westenthaler, 2006; Yang, 2009), other studies reported that integrating blog and wiki has no value or modest impact on the teaching and learning process (Cann et al., 2006; Chan & Ridgway, 2006; Divitini, Haugalokken, & Morken, 2005; Zurita, 2006). In addition, the literature is lacking an explanation of whether certain applications, such as blog, can be used more effectively in one discipline over the other.

This situation proposes a need for more studies that examine the impact of blog and wiki on enhancing student's learning in a specific discipline or context. Therefore, this study was set to examine the value of using blog and wiki in teacher education program in UAE and to compare both applications in term of their impact on enhancing learning from the point of view of pre-service teachers. In particular, this study sought to answer the following questions:

1. What are pre-service teachers' perceptions regarding the use of blog and wiki to enhance their learning?
2. Which Web 2.0 applications do pre-service teachers find more effective in their learning: the blog or the wiki?
3. What other Web 2.0 applications do pre-service teachers suggest for use to promote their learning process?

Purpose of the Study

This present study was designed specifically to investigate pre-service teachers' perceptions regarding the impact of blog and wiki on enhancing learning in professional diploma in teaching program, and to identify their perceptions regarding the application (blog or wiki) that is more effective in their learning. The study also aimed to identify other web 2.0 applications that pre-service teachers suggest to be integrated into teacher education to enrich their learning.

Significance of the Study

In contributing to the body of web 2.0 applications research literature, this study is expected to have the following significance:

1. Providing valuable insights about pre-service teachers' views regarding web 2.0 applications. This information may be used by educators to develop their courses and improve their instructional techniques through helping them to select and integrate appropriate and effective technological tools.
2. Helping educators and school teachers to create meaningful e-learning activities and tasks that meet the learning outcomes and students' needs.
3. Leading to further research in the area of using web 2.0 applications in education depending on the analysis of data collected within this study.

Methodology

Participants

This study focused on a cohort of pre-service English teachers ($n = 36$) registered in the Professional Diploma in Teaching Program at Al Ain University of Science and Technology in the United Arab Emirates during the second semester of 2010-2011. In sampling participants for the study, 15 pre-service English language teachers were selected randomly using a list of students' names registered into the three sections of Instructional Technology course upon personal contacted from the researcher to request participation. The researchers sought that this sample size ($n=15$) was adequate to have more valid results for this qualitative research study. The 15 participants composed of 12 females and three males. Eight participants had never taken blended courses, four had taken 1 or 2 of that type of courses, and three had taken more than 2 blended courses prior to the course of this study.

Special blog and wiki were added as additional components into the instructional technology course over 12 weeks. These tools were created by the course instructor using Google Blogger and DokuWiki. The blog and wiki were mainly adopted for supporting classroom instruction through fostering interaction and collaboration among pre-service teachers, contributing to a critical understanding of course material, and providing a platform where mutual support and social cohesion could develop. Thus, it was hoped that online asynchronous discussions would be able to motivate students to take on the role of critical thinkers and knowledge inquirer" (Scarce, 1997.).

During the study period, participants were required to use the course blog and wiki to conduct various learning activities such as; developing the course projects and assignments, adding their thoughts from the course readings, publishing related learning resources, posting questions about topics of interest not sufficiently covered or not covered at all, and responding to instructor's questions and course related issues. The course instructor was responsible for evaluating pre-service teachers' postings based on the following criteria that were distributed at the beginning of the semester:

- Contributions should be related to instructional technology course content and assignments.
- Contributions should include reflective ideas, rather than focusing on repeating, describing, or summarizing others' ideas.
- Each pre-service teacher is expected to post at least three varied messages per week using both tools.

The structured nature of the assignment was to facilitate a productive social interaction by ensuring that the participants engage in in-depth discussions rather than random postings (Ajayi, 2009). All postings including ideas, thoughts, responses, comments, and threads were available to the pre-service teachers to view throughout the semester.

Data Collection

Two different sources of data were used to answer the research questions. They included semi-structured interviews and analysis of participants' postings on the course blog and wiki. Interviews were employed to obtain in-depth perspectives, personal stories, and personal contexts of the participants. Students' postings were used to support the findings of the interviews by identifying what students did and what they valued.

After developing the interview questions, it was submitted to a panel of experts to judge the questions quality and adequacy for answering the research questions. Based on that review, four questions were rewritten and two new items were added. In addition, the researchers interviewed three students who were not participating in the actual study. Questions and comments raised during these interviews helped the researchers to further clarify the intentions of the study, and the wording of the questions. This process was valuable in improving the interview questions to insure their easy comprehensibility and generate data congruent with the purposes of the study. Some questions were modified and explored further as interviewing sessions took place.

According to Hitchcock and Hughes (1995), one of the important elements of successful qualitative research is establishing strong and effective relationships between the researchers and participants. This requires developing a sense of friendship between them that builds up trust and confidence. Therefore, an orientation meeting was held with all participants to explain the purpose of the study, and the data collection procedures. In this meeting, confidentiality was assured and participants' approval was obtained to use their comments and responses for scientific purposes. All participants were informed that data from their responses in the interviews and from their posts on blog and wiki platforms will be reported in aggregate manner and their identity will be anonymous.

The interviews conducted individually with participants at the end of the semester with durations varying between 16 - 43 minutes. The variation in the length of interviews was due to individual differences existed among participants as some participant elaborate more on questions than others. The semi-structured interview is a flexible

technique that gives the interviewer the opportunity to probe and expand the responses of participants during the interview. This in turn helps to obtain clearer and in-depth data (Hitchcock & Hughes, 1995). Moreover, semi-structured interview also allows participants to express their feelings and ideas, as well as provides background information and personal stories that enhanced understanding of the issues of concern in the research.

The interviews for all participants were audio taped and transcribed. Recording interviews assured having the most complete record of what was said as advised by Hitchcock and Hughes (1995). A secondary data source for this study was analyzing all students' postings that included the posted questions, answers, and comments for the semester.

Data Analysis

The data drawn from the responses to the interview questions and the content of the participants' postings were analyzed within the framework of verbal analysis method developed by Chi (1997). Verbal analysis is a coding and analyzing method for spoken and written data. It is a rigorous and systematic method of verbal analysis (Chi 1997). In the present study, the researchers followed this method literally. After gathering and transcribing the study data, it was reduced. Since verbal data tend to be voluminous, the researchers reduced the data through doing some preliminary coding on the content of the entire set and then more detailed coding on a selected subset. Then, data was segmented into appropriate portions based on semantic features such as ideas, concepts, argument chains, and topics of discussion. The main reason for segmenting is to determine what constitutes a unit of analysis. Once data was segmented, a coding scheme was developed in which each segment was independently coded according to the study research questions. Implementing coding requires deciding what utterances constitute evidence that they belong to a specific category or can be translated into a specific code. In the present study, the participants' responses were coded according to the meanings they expressed such as opinions, knowledge creation, interaction, collaboration, satisfaction, and effectiveness. After coding the data, the results were depicted to present the data to the audience and to seek patterns that can be detected in the depicted data. Finally, the perceived patterns in the depicted data were interpreted entirely based on the research questions being asked.

The internal and external validity are two important elements to judge the value of a qualitative study. In this study, the internal validity was

conducted by using peer debriefing techniques and member checking to validate the descriptions of the data and the interpretations. On the other hand, the external validity was given as much rich and thick description as possible while addressing all of the diverse aspects of the findings (Merriam, 1998) by utilizing quotes from the interviews.

Results

The results of the study are presented in order of the research questions.

Q1. What are pre-service teachers' perceptions regarding the use of blog and wiki to enhance their learning?

Overall, pre-service teachers perceived blog and wiki as primarily useful tools for supplementing teaching and learning in traditional courses to facilitate collaborative learning instead of competitive learning dominating in normal classes. They regarded them as good tools to enhance interaction, facilitate creating, sharing, and disseminating of knowledge, as well as develop reflective and critical thinking skills. As evidence, a participant stated:

At the beginning, I was concerned about the use of these new tools because I never used any of them, but after 12 weeks of using the course blog and wiki, I have a totally different feeling about them. These technological tools had an ample impact on my learning during this course, where I learned more in a faster and more interesting way. I love to read other opinions before creating my answer

Another participant concluded:

We used to think of learning as a collection of difficult activities. However, the situation is being altered by amazing new technologies. Blog and wiki provide an excellent opportunity for creating, managing, and sharing knowledge in an easier and more exciting environment. There are many opportunities to think, participate and rethink and participate again and again.

To be more specific, pre-service teachers provided a total of 55 positive opinions and comments regarding the blog use as presented in Table 2. These opinions were categorized under seven themes: (a) enhancing learning of course content, (b) creating a learning community, (c) experiencing an interesting and motivating learning environment, (d) creating and sharing knowledge, (e) providing wide opportunity for reflection, (f) breaking down the barriers of time, place, and shyness, and (g) speeding the receiving of feedback.

Table 2:
Positive Themes regarding Blog Use

Themes	Frequency	Percentage	Sample Comment
- Enhancing learning of course content	13	24%	“I love this technology called blog because it allows me to get knowledge from multiple options. Thus, I learned more things in less time.”
- Creating a learning community	10	18%	“It has the power of greatly enhancing the asynchronous communication between the instructor and students on one hand and among students themselves on the other hand. I feel that I’m not a lone anymore.”
- Experiencing an interesting and motivating learning environment	9	16%	“Wow, learning in this course is more interesting, enjoyable and stimulating.”
- Creating and sharing knowledge	7	13%	“The blog helped me to create my own ideas and answers after reading previous postings.”
- Providing wide opportunity for reflection	6	11%	“Unlike traditional teaching classes, integrating blogging in education opens a wide gate for students to get engaged in deep and rich reflective discussions wherever and whenever.”
- Breaking down the barriers of time, place and shyness	6	11%	“With the blog, take your time, think freely, don’t be shy, and don’t be afraid of wasting the class time.”
- Speeding the receiving of feedback	4	7%	“Whenever I asked about something, I found someone to help me right away in most cases.”
Total	55	100%	

In addition, participants provided 32 positive comments regarding the use of the wiki as presented in Table 3. These opinions were summarized under five themes: (a) promoting cooperation among students, (b) managing and sharing knowledge, (c) accelerating and enhancing the learning processes, (d) providing wide opportunity for reflection, and (e) experiencing an interesting and motivating learning environment.

Table 3:

Positive Themes Regarding Wiki Use

Themes	Frequency	Percentage	Sample Comment
Promoting cooperation among students	11	34%	“It is a great tool to carry out group assignments without physical meeting. Each member could do her part and allow other members to revise it as needed. All interaction and work can be done online.”
Managing and sharing knowledge	8	25%	“The wiki is more beneficial for managing and organizing documents for its effective way to achieve real cooperation among students. Each member of the group can directly modify the generated information.”
Accelerating and enhancing the learning processes	6	19%	“Both tools made my learning faster and better. I learned a great deal of knowledge.”
Providing wide opportunity for reflection	4	13%	“The wiki allowed me to read, think, ask, and reply without limits. There were many ideas and opinions to discuss.”
Experiencing an interesting and motivating learning environment	3	9%	“It is amazing teaching and learning tool. It is different from what we used to do.”
Total	32	100%	

The secondary data collection method for this study was collecting participants' posts on the course blog and wiki. During the 12 weeks of the study, participants posted 545 posts which were divided into 378 comments posted on the blog platform and 167 comments posted on the wiki platform. The 545 posts were categorized under four major themes: (a) responding to the instructor and peers' questions, (b) commenting on course materials, projects, or presentations, (c) adding supplementary materials, and (d) asking questions. For example, participants provided 59 comments about the difference between instructional technology and educational technology either to get more clarification or to respond to peers' questions and inquiries. Another example of participants' posts on the course blog is that they uploaded 47 movies and provided 33 web pages related to instructional technology course. In addition, participants heavily discussed over the blog and wiki platforms the items of the rubric that used to assess their course projects. Table 4 presents these themes with their frequencies and percentages.

Table 4:

Themes Regarding Participants' posts

Themes	Frequency	Percentage
- Responding to the instructor and peer's questions	246	45%
- Commenting on course materials, projects, or Presentations	141	26%
- Adding supplementary materials	92	17%
- Asking questions	66	12%
Total	545	100%

Q2. Which Web 2.0 applications do pre-service teachers find more effective in their learning: the blog or the wiki?

Based on the data analysis, the majority of the participants reported that the course blog was more effective than the wiki in supporting their learning. Twelve participants preferred to utilize the course blog in their learning process as opposed to the wiki. For instance, a participant said: *Both applications are amazing. Truly, in this course we have learned in a different way, and blog and wiki made our learning more enjoyable and interesting. However, I think the blog is much better. Interacting with classmates, reading others' opinions, receiving feedback are few examples of the things you need to appreciate the blog for, and you can do that in a simple and easy way.*

According to those participants, the most important features of the course blog are the ease of posting and receiving feedback, possibility of discussing issues in detail, variety of views on each topic raised, opportunity to learn from others' ideas, convenience of interacting with the instructor and peers, and speed of sharing information. This finding was evident in the participants' typical responses. A participant explained her preference:

The major advantage of the blog over the wiki is giving me an easy way to exchange information with my classmates. Although the course instructor encouraged us to use both applications for collaboration and sharing information but I used the blog much more. To be specific, the graphical user interface of the blog is more comfortable and more user friendly.

Another participant clearly stated:

If I have to answer this difficult question, certainly I shall say that the blog is more powerful than the wiki for supporting my learning. Other than being able to modify others' contributions posted on the course wiki, the blog allows you to easily do a lot of things. It is a fantastic technique to expand my understanding of the course content through the convenient opportunity of interacting with my instructors and peers.

On the other hand, three participants found that the course blog and wiki are equally beneficial and powerful tools to support and enhance their learning during this course period. They did not have any preference between the blog and the wiki because both applications were easy to use and they had a number of educational benefits. One participant said:

Each tool has its own advantages. For example, while the blog is easier to use, the wiki is a more flexible authoring tool. Overall, I would use both without hesitation. In this matter, I think how to use such tools is more important than the tool itself.

Another participant noted: "I don't have specific answer for this question. The blog is good and the wiki is good as well."

According to those participants, the course blog and wiki were equally important in terms of allowing them to share and manage information, promote group participation and collaboration, and experience learning in an interesting environment.

A participant stated:

In my future career as an English language teacher, I will make sure to integrate blog and wiki tools in my teaching. These tools are fabulous in term of enhancing learning through engaging students in real and interesting discussions of course issues. Cooperative learning can be reinforced by these two technological applications.

Another participant justified his opinion by saying: "Both tools are interesting and that what we need in our learning."

Q3. What other Web 2.0 applications do pre-service English language teachers suggest for use to promote the learning process?

A list of web 2.0 applications was provided to participants to select the applications they suggest for use in order to enhance learning. Overall, participants indicated they had a significant level of interest in using web 2.0 applications to support the teaching and learning process. It was evident in the participants' comments that they welcomed the idea of using these tools as integral part of their learning and future teaching. For example, one participant said: "Although there are some obstacles that are associated with the use of new tools in our educational system, I will keep using them for my learning and for my teaching in the near future."

As shown in table 5, the Google Docs were the most commonly suggested application to be used. Thirteen participants reported that Google Docs could be a powerful learning tool to help them during their collaborative assignments and projects. One participant noted: *Most of us live in dorms that have specific and restricted regulations, so it is difficult to coordinate face to face meetings to discuss and complete our assignments. In such situation, Google Docs can be a good option to do our group work whenever and wherever.*

Another participant pointed out that: "Similar to wiki, Google Docs allow each one of the group members to monitor others' contributions to group projects by using the tracking feature. It works well for supporting collaborative efforts."

The second most suggested application to be used was Podcasts. Eleven participants indicated that audio and video podcasts would be valuable tools for teaching and learning English language as a second language. As an evidence of this idea, a participant claimed that:

In most cases, we are taught English courses by foreign instructors. This makes it difficult to understand their accent. Links to actual lectures on the Internet would help by allowing us to watch and hear these lectures as frequently as we need. I think podcast application is a great way to meet the individual differences among students.

In addition to the above, eight participants mentioned that the online forum is a powerful application for getting and sharing knowledge. A participant remarked:

I have not used online forum for educational purposes yet, but I am pretty sure that using asynchronous discussions will positively impact my learning. Online forums are as valuable tools as wiki and blog allowing the students to access information, post comments, communicate with others, and engage in discussions in ways that might be radically different from face to face teaching methods.

Two participants stated that Social Networking such as Facebook could be an effective communication tool. As one student said “My classmates and I spend plenty of time on Facebook. So we could use part of that time in discussing our study topics.” Finally, it is worth mentioning that Photo/Slides Sharing, Syndication of Content through RSS, and Social Bookmarking were not among the web 2.0 applications that pre-service English language teachers suggested for use. These results are summarized in Table 5.

Table 5:
Number and Percentage of Participants by Suggested Web 2.0 Applications

Application	Number	Percent
- Google Docs	13	86.6
- Podcasts (Audio and Video)	11	73.3
- Online Forum	8	53.3
- Social Networks	2	13.3
- Photo / Slides Sharing, Syndication of Content through RSS, and Social Bookmarking	0	0

Discussion

The main purpose of this study was to investigate the impact of integrating blog and wiki technology on improving learning among pre-service teachers, and to examine pre-service teachers' perceptions towards the application that is more effective in their learning. It also

aimed to identify other web 2.0 applications that might be useful to promote the teaching and learning process in teacher education programs as suggested by pre-service teachers. Based on the findings of the conducted interviews and analyzing the teachers' postings on the course blog and wiki, some notable themes emerged.

Pre-service English language teachers perceived blog and wiki as primarily valuable tools for supplementing teaching and learning process indicating that their value lies in their potentiality to facilitate collaborative learning, enhance interaction, facilitate creating, sharing and disseminating of knowledge and develop reflective and critical thinking skills. The positive views towards these applications are justified by the great opportunity for interaction and reflection these applications offer. Using blog and wiki helps those students who might be intimidated by speaking in front of their peers, or those who need more time to respond to express their thoughts more freely and descriptively. The text-based communications have the power to diminish constraints of participation such as lack of communication skills, cultural differences, lack of time, shyness, or any other learning difficulties experienced by students in the classroom. These positive views toward blog and wiki applications are consistent with findings of a number of previous studies that reported several positive effects of blog and wiki on learning through simplifying information sharing and creating collaboration opportunities (Boulos, Maramba & Wheeler, 2006; Castaneda, Ahern, & Diaz, 2011; Deters, Cuthrell & Stapleton, 2010; Duffy & Bruns, 2006; Jonassen, Peck & Wilson, 1999; O'Shea *et al.*, 2006; Richardson, 2004; Schaffert, Gruber, & Westenthaler, 2006; Wang, Hsu & McPherson, 2006; Yang, 2009). However, these findings were inconsistent with other studies which reported negative feedback regarding blog and wiki (Cann *et al.*, 2006; Chan & Ridgway, 2006; Divitini, Haugalokken, & Morken, 2005; Zurita, 2006).

According to participants, one of the positive views toward these tools is attributed to the ease of use since no complicated technological skills are required to integrate blog and wiki into teaching and learning. Nevertheless, significant number of participants stated that it was the first time to integrate blog and wiki into learning. In addition, these tools allow participants to experience something different from what they used to do in traditional classroom instruction. This was in line with previous research studies (Alexander & Levine, 2008; Boulos, Maramba & Wheeler, 2006; Deters, Cuthrell & Stapleton, 2010; Nardi, Schiano, Gumbrecht, & Swartz, 2004). For example, Deters, Cuthrell and Stapleton (2010) reported that *participants' positive views towards web 2.0 applications are due to potential collaboration, information*

dissemination, application in elementary classrooms, and ease of use. In another study, Nardi et al., (2004) noted that technological applications such as blogging resulted in creating a sense of community that would be less likely to emerge in a conventional classroom setting. It is worth noting that the participants' positive views towards blog and wiki technology in the present study can be due to the fact that the UAE is a wealthy country and invest huge amount of money on information and communication technology. Further, students are encouraged by their families and their schools to use technology and have easy access to it. This in turn will enhance the level of integrating technology in their future profession. The perceptions of pre-service teachers of a specific tool influence their decisions to integrate it. Research literature has suggested that if teachers believe that technology does not fulfill their own and their students' needs, then most likely they do not attempt to implement it into their classes (Johnson, 2007). Schellens, Van Keer, and Valcke (2005) stated that individuals' perception of a learning task defines the challenge, difficulty, and the balance of motivation necessary to address it.

With reference to the second research question related to the most effective tool in learning among the two applications (blog or wiki), the majority of participants reported that the course blog was more effective in learning than the wiki. Their preference of the blog was justified by the ease of posting and receiving feedback, opportunity to discuss issues in further details, variety of views on each topic, opportunity to learn from others' ideas, and convenience of interacting with the instructor and peers. This preference is supported by other studies that indicated many advantages of the blog over other web 2.0 applications (Duffy & Bruns, 2006; Kim, 2008). However, on the hand, this finding was in disagreement with the findings of other studies (Reitman, Augart & Zhou, 2005; Castaneda, Ahern, & Diaz, 2011). In these studies, students did not have any preference between the blog and the wiki with regards to the use of both applications, the task assigned, the level of comfort working with other classmates, feedback provided or received, or improving their learning.

Despite that participants preferred using the blog for the previously mentioned features, it is vital to emphasize that the wiki also can support all those features as well. Thus, the pre-service teachers' preference of the blog over the wiki could be justified by three reasons. The first is related to the structure of each tool. As mentioned earlier, the content of the blog belongs to the owner with an opportunity to make comments so readers can see the original text and others' remarks. The wiki allows users to directly change or edit the original

content, which might give students a sense of invalidity and unreliability of posted information (Duffy & Bruns, 2006; Parker & Chao, 2007; Woolf, 2006). The second reason is the popularity of blog use among university students nowadays. For example, eleven participants in this study indicated that they have their own blogs. This reason was supported by another study (Halic et al., 2010). The third reason is the ease of use. According to participants, the blog is easier to operate than the wiki because the graphical user interface of the blog is more comfortable and user friendly. Similarly, Duffy and Bruns (2006) noted that among the benefits that blog technology provides over other web 2.0 applications is the ease of creating a web page without learning HTML or using a web authoring software.

In relation to the third research question of the study, the results showed that participants suggested several web 2.0 applications that can be powerful in enhancing learning such as Google Docs, Podcasts, online forums, and Social Networks. This finding emphasizes the importance of subject-matter or learning outcomes when using Web 2.0 as teaching and learning tool. Such finding was highlighted in some of the previous studies (Alam, 2008; Grosseck, 2009; Kumar, 2009). According to Grosseck (2009), the importance of the alliance between the technological tool and the subject being taught should be considered. Hence, it is significant to think how students will learn from the new technology before using it. Educators are required first to discover the features of each technological tool to be able to select the best choice for their students' learning.

Conclusion

In conclusion, this study found that pre-service teachers perceived Web 2.0 applications as useful tools to enhance their learning. They believed that blog and the wiki have the power to add significant value to existing teaching and learning practice. Web 2.0 applications allowed teachers to access, explore, communicate, collaborate, express, as well as utilize information in a very interesting and innovative manner. Pre-service teachers also suggested a number of web 2.0 applications to be integrated into teacher education to enrich their learning.

Study Recommendations

The study presents several recommendations that may lead to effective integration of web 2.0 applications in higher education. First, teacher education programs need to motivate educators to use web 2.0 applications in order to enhance the level of technology integration in

these programs. Enhancing the level of web 2.0 applications can be done through: (1) familiarizing educators with various web 2.0 applications used in education, (2) providing educators and students with training programs that focus on the effective use of such technologies, and (3) rewarding outstanding educators for integrating technology. A combination of intrinsic and extrinsic motivating incentives should be offered to educators to utilize web 2.0 applications in their instruction.

Secondly, a strategy for using web 2.0 applications should be created since many faculty members and students are not familiar with them yet. Such strategy may include instructions and regulations for technology use, criteria for the content, and guidelines for evaluating students' postings and contributions.

Thirdly, educators need to select technologies that support curriculum objectives and fulfill their students' needs. It is important to keep in mind that using web 2.0 applications in education is not about posting content on the web to be downloaded and read. Indeed, they are methods to provide a new set of tools that add value to the entire learning environment. Therefore educators must prove that the selected applications work well before using them with their students.

Finally, this study has made some contribution to the existing literature on the use of web 2.0 applications for educational purposes; however, there is a need for further research that provides supplementary insights into the educators and students' perceptions of these technologies. For example, a mixed-methods study with a larger sample would be necessary to validate the findings of the current study. Further research might investigate the impact of web 2.0 applications on achievement in specific disciplines, and the ways of evaluating students' postings on such platforms.

Study Limitations

The study has a number of limitations some of which can be related to the limitations that a qualitative research may have and others can be related to the current study itself. For example, one of the major limitations of the qualitative research is that the study group in such research may not be representative of the larger population with the same degree of certainty that quantitative analyses can. This is because the findings of the research are not tested to discover whether they are statistically significant or due to chance. Further, in a qualitative research it takes time to build trust with participants that facilitates full and honest self-representation. In the current research, this may constituted a limitation as participants may did not give honest responses to researcher. Another major limitation lies in that this

research was conducted in Arabic and participants' responses were in Arabic. These responses were translated into English and they may not have been properly translated, especially, the Arabic responses were told in dialect that can be hard to be properly translated into the English language and this may negatively affected the meaning. Moreover, the current research was conducted on a sample of pre-service teachers who do not have yet long enough experience using the blog and wiki as teachers and therefore, the responses they gave may have not been reliable enough to make judgments on the effectiveness of these programs. The research was conducted on 15 pre-service teachers (12 females and 3 males) as this may highlight another limitation related to sample gender.

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