Asynchronous Discussion Board in the Program of Professional Diploma in Teaching: Perceptions of Pre-Service Information Technology Teachers

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Abstract: The current study presents a qualitative look at a blended learning approach by investigating pre-service IT teachers’ views of asynchronous discussion board (ADB) as a tool for supporting learning and evaluates the advantages and challenges of such a practice. ADB was integrated into the methods of teaching IT course for 13 female pre-service teachers over 14 weeks. In addition to learning in traditional classroom setting, students were requested to make, collaboratively or individually, weekly contributions to the course discussion forum. They were asked to discuss course materials, generate questions, respond to others’ questions, and upload additional links and resources. All those contributions were weekly evaluated by the instructor. Data were collected through semi-structured interviews and analysis of participants’ postings on the discussion board. The results specified that ADB was perceived as a valuable tool for improving communication and learning. It allowed students to obtain, investigate, communicate, and utilize acquired information and knowledge in more interesting and different way from what they used to do in face-to-face pedagogical setting. In contrast, the main challenges of using ADB as perceived by participants were the heavy extra workload “time burden”, slow network and shutdowns, lack of immediate feedback, and making connections to prior postings. Discussion of participants’ views was probed, and implications for efficient integration of ADB were offered.

Key Words: Asynchronous discussion board (ADB), information technology (IT), learning, and social interaction.

Introduction

The growing accessibility of information technology (IT) suggests that teachers’ preparation to teach the new generation should be profoundly transformed. According to Brewer and Klein (2006), the substantial affordances of the collaborative technology have the power to challenge the conventional notion of educational practices, social interaction, and school timetables. The new digital technologies are altering how teachers and students present and arrange information, and how they communicate and interact with information and with each other (Glenn, 2002). It is apparent that teaching and learning various subject areas are now not restricted to the few and short face-to-face classroom meetings assigned for instruction according to school timetables (Ajayi, 2009).
Fulton, Glenn and Valdez (2004) stated that advanced technologies can improve teaching and learning. Nevertheless, the benefits of technology in education rely on how these technologies are being integrated to support pedagogical practices. Thus, teacher education programs need to equip graduates with the knowledge and skills needed for the effective integration of technology into their future teaching (Fulton et al., 2004). The notion that technologies have the potentiality to develop education is an important one. For instance, Asynchronous discussion forums defined as written communication that takes place on a bulletin board, blog, and wiki in delayed time could benefit teaching and learning in several ways (Cheung & Hew, 2005; Johnson, 2006). Such technology tools increase the use of active, peer–to–peer, and student centered learning based-strategies (Chen & Looi, 2007).

The desirable characteristics of asynchronous discussion tools which rely heavily on good keyboarding and reading and writing skills include: the ability to conduct discussion whenever and wherever, storing all discussion threads and contributions for later analysis and reflection, and diminishing the barrier of shyness that might hinder participation and involvement in traditional learning contexts, and offer extra time for clearer and more thoughtful expression (Cheong & Cheung, 2008).

Specifically, ADB for example can be used for extending classroom discussion, reflecting on given lectures, sufficiently responding to questions which were not answered during classes because of lack of time, discussing scenarios, case studies, and readings, producing questions and answers about learning activities and assignments, and presenting or sharing related ideas, products, or links (Ajayi, 2009; Cheong & Cheung, 2008).

In terms of the effect of ADB on teaching in teacher education, it was found that ADB is a collaborative and interactive learning tool that has the power to allow pre-service teachers to learn in an innovative learning environment (Johnson, 2006; Simpson, 2006). Taking on the promise of ADB as “powerful pedagogical tool”, educational institutions started to encourage instructors and students to use this tool to augment teaching and learning; however, research literature indicated that a significant number of university instructors have been slow to use technology in their teaching. The face-to-face teaching approach is still the dominated teaching approach that is used. Furthermore, research revealed that instructors’ modest integration of technology is attributed to their uncertainty that technology will enhance the effectiveness and quality of student learning (Mehra, 2007; Otero et al., 2005). Additionally, it was stated that educational administrators have insufficient knowledge of the affordances of technology and how those affordances can be achieved (Gura & Percy, 2005).

On this subject, Molebash (2004) accused educational institutions of the fundamental gap between how technology should be integrated and how it has been actually integrated. Therefore, educational institutions need to constantly assess and renovate their programs to assure that these programs are adequately responsive to prepare teacher candidates
entering today’s schools to take advantage of the powerful technologies in teaching and learning. It is obvious that teachers would not be able to achieve the goals of the educational reform without a solid preparation for the effective technology integration (Fulton et al., 2004). Given the fact that recognizing students’ views of technology use will assist educators and researchers to establish valued connections between the principles of technology use for supporting learning and its actual use in real situations (Johnson, 2007). To this end, this study qualitatively investigated pre-service IT teachers’ perceptions of ADB as a learning tool; it also evaluates the advantages and challenges of such a practice.

**The Purpose of the Study**

Since the research literature in the Arab World is limited regarding the use of ADB in education, this study aimed at examining pre-service IT teachers’ views of using ADB, their views of the types of learning opportunities provided by this type of technology, and the advantages and challenges of such learning activities.

By understanding such issues, educators and administrators will be better able to establish learning environments that meet students’ goals, needs, and interests. Identifying students’ views of a certain learning activity explains its barriers and the procedures to address those barriers (Shellens, et al., 2005). In this regard, Molebash (2004) claimed that pre-service teachers’ views of technology impacted their decisions of its integration. Therefore, in contributing to the research literature related to the discussion board, this study is expected to advance understanding of the effective use of ADB technology to support teaching and learning.

**The Research Questions**

This study was undertaken to develop an understanding of pre-service IT teachers' views toward using ADB for supporting learning by addressing the following questions:

- What are pre-service IT teachers’ views of ADB as a learning tool?
- What are pre-service IT teachers’ views of the types of learning opportunities provided by ADB?
- What are pre-service IT teachers’ views of the challenges of using ADB?

**Literature Review**

Within the educational context, some technology tools have attracted more attention than others. As evidence, asynchronous communication tools have gained a growing level of interest among students, teachers, and researchers. ADB as an example is progressively becoming an influential tool for design new opportunities and providing innovative educational activities (Doering, Johnson & Dexter, 2003; Lim & Cheah, 2003; Simpson, 2006). Unlike text, audio and video conferencing, ADB is an asynchronous
communication tool which allows users to interact from a variety of locations at a time that fits each one’s schedule and needs (Corich, Kinshuk & Hunt, 2004).

Several studies have discussed different sides of ADB use in teacher education. For example, Lim and Cheah (2003) conducted a study to investigate pre-service teachers’ views regarding the impact of ADB on their tutors’ role in teaching postgraduate educational courses in Singapore. Gaps were found between the pre-service teachers’ views of the roles of their tutors and their actual experiences. Based on the identified gaps, several implications for the role of the tutor were provided which include: creating meaningful activities; teaching participants how to effectively participate in online discussion; answering questions and queries, providing feedback, presenting contradictory views to prompt thinking and reflection; monitoring participation to keep the discussion attentive and focused; articulating conclusions; and suggesting additional resources for expanding learning.

In term of studying the benefits of using ADB, Biesenbach-Lucas (2003) investigated native and non-native students’ views of the impact of ADB on learning in teacher training courses. The key benefit of ADB as perceived by both groups was the ability of ADB to enhance social interaction with peers. While non-native students reported that ADB facilitated understanding of the course content, they stated that ADB did not provide them with additional language practice. Finally, participating students indicated that the nature type of interaction supported by the tool, deficiency of topic prompts, and the need for making connections to previous contributions were the main barriers of ADB use.

Similarly, Lee-Baldwin (2005) examined the effect of ADB on facilitating pre-service teachers’ reflective thinking. To achieve the purpose of the study, a mixed methodology approach was used. The findings revealed that participating pre-service teachers perceived ADB as a powerful tool to improve their reflective thinking. The study also suggested the necessity for strategic student dividing into groups to obtain an advanced level of learning. Moreover, establishing relationships between social conversation, group members, and demonstrated levels of learning were considered as significant factors for efficient use of ADB.

In another study conducted to investigate the impact of the type of positive interdependence (roles, rewards, roles-plus-rewards, or no structure) and the level of affiliation drives on interaction conducted via ADB. Brewer and Klein (2006) found that students given roles plus rewards interacted with their group members more significantly than students given rewards only or no-structured-interdependence situations. A significant positive correlation was found between the quantity of interaction and students’ achievement. Conversely, the study revealed that there was no significant difference in achievement based on the type of interdependence or by affiliation drives. Finally, it was found that the type of interdependence and affiliation drives significantly impacted students’ attitudes of using ADB as a collaborative tool.
To examine the effect of the use of ADB on improving students' understanding of learning content and enhancing their knowledge construction ability, Schellens and Valcke (2006) conducted a study that involved 300 students worked in 38 online discussion groups for six months. The study revealed that significant improvement in the intellectual interaction; task-orientation and knowledge construction were observed. The study also indicated that conducting discussion in a small group size had a significant effect on interaction and knowledge construction.

Johnson (2007) investigated students' perceptions of using ADB as a tool to construct knowledge. He argued that instructors’ identifying of students’ perceptions of ADB learning activities will help them to make a connection between how learning tasks are being understood and how they are being actually implemented by students. The study revealed that conducting asynchronous online discussion using ADB can facilitate a learning environment that is beneficial to help students construct knowledge in a meaningful way.

In his contribution to the literature body of ADB, Ajayi (2009) explored pre-service teachers’ perceptions of ADB as a learning tool. Thirty-three pre-service teachers registered in two literacy courses participated in the study. ADB was perceived by participants as a significant learning tool. The key educational benefits of ADB were promoting situated learning, facilitating a collaborative environment for knowledge construction, and affording personalized learning experiences.

The review of literature related to ADB use in teacher education programs has discussed many uses of ADB and its positive impact and benefits to the learning process. Moreover, the literature review has suggested that instructional designers need to offer students specific structures that improve the effective use of ADB to support learning. Nevertheless, the research literature indicated some limitations for ADB use (Meyer, 2004). This, in turn, suggests that more studies to sufficiently comprehend pre-service teachers’ perceptions of using ADB as a teaching and learning tool are needed especially in the Arab world.

**Methodology**

This study was conducted at Al Ain University of Science and Technology (AU) located in the United Arab Emirates (UAE). AU which was established in 2005 is a rapidly growing institution of higher education. It has two campuses. The first one is in Abu Dhabi, the capital of the UAE, and the second one is in Al Ain city. The University’s student enrollment has tripled since its establishment, including students from more than twenty nationalities studying in five colleges.

This study was implemented as a case study in the College of Education following the inspiration from the AU administration to instructors to incorporate IT in their
instruction. Very little technology professional development was offered to faculty, especially in terms of how the features of Share Point course management system (CMS) could best be used for supporting education. In this study, ADB was added as a supplementary element to methods of teaching information technology course (EDU 537) during 14 weeks. Additionally to learning in a traditional classroom setting, students were requested to make, collaboratively or individually, posts and contributions to the class discussion forum supported by Share Point CMS on a weekly basis. Students were asked to discuss class topics, create questions, respond to others questions, upload documents, and provide Website links.

The aims of this blended format were: improving understanding, of course, materials by fostering collaboration among students, enhancing critical thinking, and facilitating a medium where communal support and social interconnection could take place (Biesenbach-Lucas, 2003)). Thus, the online discussions were implemented to “empower the students and to encourage them to take on the role of critic and inquirer” (Scarce, 1997).

Participants

Participants of the study consisted of 13 female pre-service IT teachers. They were trained by the course instructor (the researcher) to use ADB to support their learning. Students were initially introduced to the tool, its features, and how those features could be specifically integrated for supporting learning in methods of teaching information technology course. Mainly, it was concentrated on the ADB features and functions that allow students to make questions and responses, read others contributions, work individually and collaboratively, post educational resources and links, and interact with their instructor, classmates, and content (Ajayi, 2009).

During the study duration, participants were required to make weekly contributions to ADB. They were required to post questions about the class topics, post questions about interested topics which were not sufficiently addressed in the class, post adequate responses (five sentences) to the instructor and other students’ questions, and discuss course-related issues. The aim of this type of structured assignment was to facilitate a collaborative learning environment by giving students an opportunity to socially interact and engage in thorough and productive discussions rather than unintended contributions (Ajayi, 2009). To achieve this aim, students were required to follow specific requirements and guidelines as explained in the assessment form. The assessment form which was distributed at the beginning of the semester encompassed (Ajayi, 2009):

- Posts and contributions must be interrelated to the class content.
- Posts and contributions must embrace critical thinking and reflection. Recitation, paraphrasing, or summarizing other posts is not accepted.
- Every student is weekly expected to contribute a minimum of two posts.
One post should be a reactive comment to an earlier post (Biesenbach-Lucas, 2003).

Following these criteria which required participants to generate their consequent posting on prior ones would allow them to discuss the course topics deeply and thoughtfully. Furthermore, these criteria were expected to eliminate the impact of unplanned postings, which limits student collaboration (Graham, et al., 1999; Hiltz et al., 2000). Based on a weekly assessment of students’ contributions using the previous criteria, the instructor provided feedback and advice to enrich discussions and improve students’ understanding of explored topics. All instructor and students’ contributions were stored and kept available to students throughout the semester for future review and reflection.

Data Collection and Data Analysis

Data were gathered through semi-structured interviews and analysis of participants’ postings on the discussion board. Interviews were utilized to gain comprehensive views, individual stories, and particular contexts of participants. The questions of the interview were developed by the researchers based on the related literature (Ajayi, 2009; Biesenbach-Lucas, 2003; Johnson, 2007; Lee-Baldwin, 2005; Lim & Cheah, 2003; Schellens & Valcke, 2006), research questions, and researcher’s experience. The core focus of interview questions included:

- Pre-service IT teachers’ views of ADB as a tool to support learning;
- Types of learning opportunities afforded by ADB;
- Advantages and challenges of ADB.
- Recommendations for improving the integration of ADB.

Before conducting the actual interviews, the initial version of the interview items were validated by four educational experts specialized in curriculum design and teaching methods, educational technology, and research methodology and assessment. Experts judged the quality and adequacy of the proposed questions to achieve the purpose of the study. Based on experts’ comments and suggestions, three questions were reworded, and one question was added. Then, four pre-service teachers who were not participating in the actual investigation were interviewed by the researcher to advance the clarity of the study’s’ intentions and the phrasing of the questions. While notes and comments mentioned during the interviews helped to modify some items of the interview guide, this pilot process did not contribute to changing the primary list of questions. The process of addressing validity and reliability of the interview guide improved the confidence that the interview questions were understandable, and would help the researcher to collect data corresponding with the purpose of the study. Since all participants were Arabic native speakers, the interviews were conducted in Arabic. Afterward, the researcher translated all participants’ responses to English. (A version of the final interview guide is presented in Appendix A).

After signing the consent form, the researcher interviewed participants individually in his
office during the last week of the semester. Each interview lasted for 35-50 minutes based on each participant’s experience and contributions to the ADB. All interview sessions were audio-taped to assure recording all participants’ perceptions, ideas, comments, opinions, and suggestions (Hitchcock & Hughes, 1995). Subsequently, the researcher transcribed all interview recordings. The second data source was students’ postings on ADB, which included participants’ weekly contributions (questions, answers, ideas, comments, and uploaded educational resources and links). This method was used to support the data collected through interviews by taking a look at how students actually used ADB to support learning.

The data drawn from responses to interview questions and the content of the participants’ postings were analyzed using the verbal analysis method. The verbal analysis developed by Chi (1997) is a coding and analysis method used to analyze spoken and written data (Chi, 1997). Primarily, reducing the vast quantity of data collected was done by applying a preliminary coding system on the whole set of the collected data. Then, data were divided based on semantic features, such as concepts, ideas, opinions, and themes of discussion to recognize the elements of analysis. These segments were subsequently used to develop a coding system according to their meanings, such as (knowledge construction, independent learning, interaction, satisfaction, effectiveness, development and growth, and challenges). To operationalize evidence for coding, students’ utterances were interpreted into a specific code. Afterward, the main themes were identified based on the coding system. Finally, quantitative analysis was used to interpret the recognized themes according to the research questions.

**Results**

This section shows the results of the study according to the research questions. Then a discussion of the overall themes developed from data analysis was provided.

**Results Related to the First Question:**

The analysis of data gathered from participants to answer the question “what are pre-service IT teachers’ views of ADB as a learning tool?” indicated that participants had positive views toward ADB as a learning tool. Participants’ self-assessment of the effectiveness of using ADB to enhance their learning of the course content indicated that ADB helped them to develop a better and quicker overall comprehending of the content materials and its complex topics, and enabled them to retain more information.

These findings were apparent in respondents’ typical answers, including:

- **ADB is a powerful tool to enhance my understanding of the course content.** When I didn’t comprehend something the instructor said in the class, or I missed some points he taught, I could easily get answers from the online discussion board by asking him or asking my classmates. In
some cases, I got answers through reading the messages which other students posted.

- Posting a good answer required me to review the instructor’s notes, my own notes, and course reading. Otherwise, it would be difficult to participate in online discussions. In my opinion, reviewing the course content on a regular basis helped me to remember much more information.

- In other courses, I do concentrate on the instructor’s perspectives. In this class, the situation is much different. ADB helped me to gain several perspectives and opinions from my classmates. It made me see things more clearly and deeply. I learned many different views about the topic.

- The online discussion improved my learning in this class. Using ADB increased my interest in the course. It made me enjoy the course more by sharing and reading other’s views and experiences. In addition, now I enjoy using technology to access and construct knowledge by surfing, and connecting to many websites provided by my instructor or classmates.

Another important finding of the current study was that participants viewed ADB as a convenient communication tool. Since participants communicated with others through writing, ten of them (77%) perceived this way of communicating as an advantage. They concluded that they were able to communicate and collaboratively interact with their instructor and classmates more efficiently. For example, one participant said:

*I prefer posting an answer on the online discussion board more than saying it in front of my classmates. ADB allowed me to communicate in writing. When I write, I can write at any speed I want. I can also correct myself while I’m writing. However, this advantage does not exist at the time of speaking.*

In addition, seven participants (54%) viewed ADB as a good strategy to develop their learning skills. They welcomed the idea of being able to think, absorb, and reflect before replying to the questions and ideas of others without concern for the class time being ‘wasted,’ and without concern that the topic has already ended. A participant stated:

*I like the idea of using ADB to discuss ideas that have received minor or no attention during class time. I’ve learned that things are not always right and they can be wrong in some cases. I learn best by doing. I just need a little uninterrupted time to really absorb everything.*

Another participant concluded:

*ADB empowered me to communicate with my instructor and classmates alike. It allowed me to access an enormous amount of information that forced me to think more deeply. In the future, I’m going to use ADB in my teaching profession to*
support my students’ learning. I will be able to assess their work online and give them immediate feedback.

Results Related to the Second Question:

The second research question sought to examine participants’ views of the types of learning opportunities provided by ADB. The analysis of participants’ postings on the discussion board and responses on interview questions indicated that they expressed positive perceptions toward learning opportunities and activities afforded by ADB. Moreover, most participants (11, 85%) considered these activities enjoyable, interesting, and beneficial. The following are some participants’ typical responses:

- The thing that I truly like about ADB is that I can get information and feedback from a variety of sources. Whenever I needed help, there was someone there. For example, when you have a question or need some clarification, you can leave a message in the discussion forum, and you can get a quick answer.
- Conducting many learning activities at the same time is a great advantage of ADB. I can read about topics of interest to me, work with others, and develop my response.
- ADB has a lot of advantages. For instance, although I’m specialized in computer science, I forgot how to use some features of online discussion boards specifically as a learning tool. This course helped me to refresh my skills in using such medium. In addition, reading other comments helped me to think of things differently.

The most preferable and beneficial learning activities as mentioned by participants were (a) getting information from different sources: links to websites, texts, the instructor, classmates, and lecture notes, (b) covering interesting topics in much detail, (c) working collaboratively with group members without face to face meeting which in some cases was hard to arrange, (d) developing skills of using ADB features, and (e) reading other comments before responding. These findings are presented in Table 1.

<table>
<thead>
<tr>
<th>Learning Opportunity</th>
<th>Number</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Getting information from different sources</td>
<td>13</td>
<td>100%</td>
</tr>
<tr>
<td>Covering interesting topics in many details</td>
<td>11</td>
<td>84.6%</td>
</tr>
<tr>
<td>Working collaboratively with group members</td>
<td>10</td>
<td>76.9%</td>
</tr>
<tr>
<td>Developing skills of using ADB features</td>
<td>8</td>
<td>61.5%</td>
</tr>
<tr>
<td>Reading other comments before responding</td>
<td>6</td>
<td>46.1%</td>
</tr>
</tbody>
</table>

Results Related to the Third Question:
While participants in this study held positive perceptions toward using ADB, the idea of using ADB was pretty vague for some of them. The majority of participants (10 participants 77%) stated that this was the first time incorporating such a new medium in their learning process. Pre-service IT teachers raised some concerns regarding using ADB. To be specific, participants reported that the challenges of ADB fell into four main categories: (a) the heavy extra workload “time burden”, (b) slow network and shutdowns, (C) lack of immediate feedback, and (d) making connections to prior postings.

First, participants indicated that doing online discussion needed plenty of time, effort, and preparation. A participant raised a concern by saying:

\textit{A great deal of pressure and time were necessary to read the numerous and disconnected comments posted by my classmates. Sometimes, I did not find enough time to respond effectively. Reading and summarizing the comments, then building my own response based on the previous ones are a huge effort.}

Another participant noted: “At the beginning, ADB was very interesting. As the class went on, using ADB became too time consuming and boring because things were being said over and over again.”

Another major challenge of using ADB as identified by participants was the deficiency of proper technologies. Almost all participants in the present study (11 out of 13, 85%) reported that they experienced technological problems while using ADB. One participant explained this issue by saying: “Most of us live in dorms with no access to the internet. Thus, we depend on the university’s network to do our online assignments. In many cases, I got frustrated because of failure of technology to work as planned.” Another participant said: “ADB is a great learning tool, but the slowdown of the internet affected perceptions of the usefulness of the learning activities afforded by this tool.”

Thirdly, while most of the participants considered the extended time provided by the instructor as an advantage to writing responses of more intellectually demanding nature, they considered the extended time they had to wait for other students to reply to their comments, questions, and requests for clarifications as a big disadvantage of ADB. Participants concluded that they needed immediate feedback and dialogue with others to help them monitor the clarity and accuracy of their own thoughts and to ensure they understood their classmates’ thoughts and ideas. A participant reported that:

\textit{Personally, I used to wait for a long time to get any answer for my question. It is time-consuming; I think setting a specific time by the instructor is a good way to improve the use of online discussion.}

The fourth challenge mentioned by participants was the requirement to create connections to previous postings. They complained about asking them to build their response based on prior messages. One participant noted:
I really liked and enjoyed the ADB especially at the first and second assignment. It allowed me to read and hear others' ideas and opinions and also to share my own ideas and thoughts with them, but the requirement to make a reaction to previous messages was a big challenge.

Another participant commented on this issue as following:

Making connections to previous messages and notes is bleary. This required us to read all ideas and thoughts that were not related. Actually, we do not have enough time to do so. Instead, I suggest that having students respond to a specific idea would be more beneficial.

Discussion

In this age of technology and the rapidly changing world, the meaning of “knowing” means more than the ability to memorize information; it rather means the ability to access information from different sources, and to know how to utilize it. Therefore, educational institutions are responsible for preparing teachers to be able to select and use technology tools that allow them to facilitate a productive learning environment (De Benedetto, 2005). Aligned with this conclusion, research literature indicated that identifying and understanding of students’ views of their learning with technology will help researchers and educators to make a connection between how learning tasks are being understood and how they are being actually implemented by students. (Ajayi, 2009; Johnson, 2007; Shellens, et al., 2005).

The current study investigated pre-service IT teachers’ views of ADB as a learning tool and evaluated the advantages and challenges of using it. The discussion of the finding is divided into three themes. These themes will be further explored.

Perceptions of ADB as a Learning Tool

Pre-service IT teachers held positive views toward ADB as a learning tool. They felt some features of ADB improved their learning process. Specifically, participants indicated that ADB helped them to gain better and quicker overall understanding of the content materials and complex topics, enabled them to retain more information, and developed their learning skills such as thinking and reflection. In addition, participants perceived ADB as a convenient communication tool to communicate with their instructor and other students in class more efficiently.

Since the nature of ADB allows all students to participate in the online discussion, each student was able to convey his voice to others. By using ADB, even those students who may be impressed to speak during the class or those who need more time to respond were
more convenient to participate. This opportunity offered by ADB is not available in the traditional teaching classroom where the teacher or some students often control discussion sessions (Lee-Baldwin, 2005).

This result was in agreement with the results of several studies that concentrated on pre-service teachers’ views of ADB (Ajayi, 2009; Biesenbach-Lucas, 2003; Johnson, 2007; Wijekumar & Spielvogel, 2006). For instance, Johnson (2007) argued that using ADB as a discussion forum allowed students to conduct a variety of learning activities, such as examining, analyzing, synthesizing, and evaluating ideas from various learning resources including classmates’ contributions, readings, and website links. Wijekumar and Spielvogel (2006) concluded that asking students to provide feedback on their contributions and focusing on discussing related course through ADB helped students to engage more frequently in class, with greater confidence, and with greater enthusiasm in the interaction process. Similarly, Biesenbach-Lucas (2003) stated that students perceived ADB as a great learning source because it provided them with a genuine audience (their classmates) and an authentic writing purpose. Students who were expected to write for the instructor and for their classmates as well had to perform more than presenting information. They had to express their opinions, agree or disagree with others in a quite public forum. Also, Ajayi (2009) indicated that ADB was as a significant learning tool because it had the power to promote situated learning, facilitated a collaborative knowledge construction, and provided personalized learning experiences.

**Learning Opportunities Offered by ADB**

The majority of pre-service IT teachers expressed positive views toward learning opportunities and activities afforded by ADB, and they considered these activities as enjoyable, interesting, and beneficial ones. In addition, participants welcomed the ideas of getting information from different sources, covering interesting topics in much detail, working collaboratively with group members without face to face meeting which in some cases were hard to arrange, developing skills of using ADB features, and reading other comments before responding.

This finding could be justified as following: learning activities offered by ADB helped students to access, obtain, investigate, and utilize knowledge in an interesting and fundamentally different ways from the boring face-to-face pedagogical instruction which students used to do. In particular, pre-service teachers could start their learning experiences, stop, or continue whenever and wherever. In addition, ADB provided participants sufficient opportunities to exercise, investigate, make errors, learn, and formulate results and conclusions. They were able to use the tool to read others’ opinions, access website links, upload materials, and print content (Ajayi, 2009).

Another important factor that made learning opportunities offered by ADB more enjoyable and beneficial is providing students with a significant degree of freedom and autonomy. Using ADB allowed pre-service teachers to learn independently by looking at
additional learning materials, deciding what parts of discussion were interested and important to think about, reflect on, and make a contribution according to their own time schedule. According to Gee (2003), ADB provided students various methods of learning that promoted them to depend on their strengths and learning styles to make choices and solve problems. Schellens et al. (2005) stated that learners will perform their tasks better when they offered a space of freedom for defining their own problems to be addressed, instead of introducing them to rigidly planned problems by their instructor.

**Challenges of Using ADB**

It is evident that shifting from the traditional instruction to the online format demonstrates various challenges to both teachers and students. In this study, pre-service IT teachers acknowledged a number of issues that hindered their efficient integration of ADB as a learning tool. They reported that the challenges of ADB fell into four main categories: the heavy extra workload “time burden”, slow network & shutdowns, lack of immediate feedback, and the requirements to make connections to prior postings.

Providing online activities is a complicated process. It requires many resources to introduce and deliver these activities effectively. Online learning activities would not be fruitful if they are hindered by an insufficient network bandwidth or a deficiency of instructor or students’ expertise of online learning tools. Online learning activities are not just using modern tools to upload content to the Web, download and read that content as a way to substitute traditional classroom instruction. Online learning is a method to provide a new collection of tools that enrich the entire traditional learning environment. Delivering such activity effectively requires adequate technology infrastructures, training programs for instructors and students, and curriculum development resources (Arabasz et al., 2003).

In term lack of immediate feedback and making connections to prior posting challenges, Black (2005) offered some recommendations for attentive, thorough, and reflective asynchronous online discussion. These recommendations included:

- Providing students with detailed guidelines and criteria for acceptable contributions.
- Providing examples of reflective contribution to be used by students as models.
- Preparing well-designed questions and topics for guiding and promoting participation.
- Requiring students to make specific connections to the course readings.
- Sending a personal note to any students who posts unsuitable or irrelevant contribution.
- Summarizing the discussion threads by students or the instructor.
- Setting accountability.
Digital technology such as ADB will play an increasingly significant role in education. Supporting instructors and students in their use of such technology is a pedagogical issue and a technical one. Instructors and students’ views of technology use should be given more attention because those are the individuals who will utilize technology tools that drive institutional growth and competitive advantages. Addressing the obstacles that instructors and students face is the initial step towards the long-range success of technology integration.

**Conclusion and Implications**

This current study qualitatively investigated pre-service IT teachers’ views of ADB and evaluated the advantages and challenges of such a practice. The key findings of the study were:

- Pre-service IT teachers had positive views toward ADB as a tool to support their learning. The important advantages of ADB as indicated by participants were enhancing their learning of the course content, offering them a convenient communication tool, and developing their learning skills such as thinking and reflection.
- Pre-service IT teachers expressed positive perceptions toward learning opportunities afforded by ADB. The majority of them considered these opportunities as enjoyable, interesting, and beneficial ones.
- Pre-service IT teachers named a list of challenges that hindered their effective use of ADB. The most important challenges concerning participants were the heavy extra workload, slow network and shutdowns, lack of immediate feedback, and making connections to prior postings.

Based on the results of the study, the following implications were provided to enhance the effective and meaningful integration of ADB. First, based on the benefits gained as a result of using ADB, Universities need to motivate and encourage their instructors to integrate ADB in their instruction. Intrinsic and extrinsic incentives could be offered to faculty members to enhance their use of IT applications such as ADB.

Second, AU should provide adequate and reliable technology and technical infrastructures. The accumulative impact of technology is the development of learning methods and the accessibility of more choices for both students and instructors. In other words, IT has the power to make learning more interactive and allows more learner control (Ajayi, 2009). However, the advantages of technology use can only be attained if students and instructors have access to appropriate technology that facilitates effective educational practices (Arabasz et al., 2003).

Third, AU should provide training sessions for students and instructors that focus on the use of IT and online tools. Participants indicated that among the challenges of using ADB were a lack of immediate feedback and making connections to prior postings. These
challenges may refer to the deficiency of expertise of designing and conducting online learning activities. Thus, offering instructors and students appropriate technology training sessions could help them to design and apply their online activities independently and effectively (Fulton et al., 2004).

As stated earlier, digital technologies are altering how teachers and students present and arrange information, and how they communicate and interact with information and with each other (Glenn, 2002). This created many opportunities, problems, and challenges for instructors and students. Identifying those opportunities and addressing its problems and challenges will improve the effectiveness of those tools as a mean for enhancing educational quality in schools and universities.

References


Appendix A:

The questions of the interviews:

1- Have you used asynchronous discussion board (ADB) as a learning tool in the past?
2. If yes, what type of courses did you use it in? And, what type of assignments and activities did you use it for?
3- How easy was it to use ADB?
4- Did you experience any technological problems when using ADB? What kind?
5- Regarding using ADB in this class, do you feel that using ADB helped you to learn more effectively? In what ways?
6- How did ADB allow you to tap into other resources to help you learn in this course?
7- What kind of unexpected skills and knowledge did you acquire by using ADB?
8- Did ADB motivate you to learn in this class? How?
9- What do you think about the kinds of learning opportunities afforded by ADB?
10- What features of ADB were most effective? Why?
11- What were the worst features of using ADB in this class? Why?
12- What were the greatest challenges of using ADB in this class?
13- Was there anything not clear about the ADB assignments? (If yes, please explain.)
14- Did the fact that your instructor evaluated your messages affect your participation in any way?
15- Would you be enthusiastic about using ADB in another course in the future?
16- What suggestions would you give for modifying the use of ADB as a learning tool?