

Reflections on Effects of Blogging on Students' Achievement and Knowledge Acquisition in Issues of Instructional Technology

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Abstract

The purpose of the study is to investigate the effects of blogging on Turkish undergraduate students' achievement levels in issues of instructional technology in a computer course. Moreover, this study reflects the observations of the instructor and the opinions of the students regarding contributions of blogging to their knowledge acquisition and information searching and sharing skills. The methodological framework of the study is based on a pretest-posttest experimental design with a control group and qualitative research techniques including interviews, document analyses and observations. A total of 68 undergraduate first year students in two groups (N=34 in experimental, and N= 34 in control) participated in the pretests and posttests. In addition, a total of 21 students took part in the interview process. The results showed that there was no significant difference between the mean achievement scores of the experimental and control groups in pretest. However, there was a significant difference between the mean scores of the experimental group and control group in the post test in favor of the experimental group. Also, the results indicated that the students in the experimental group had significantly higher scores in the posttest than in the pretest phase. As a result, both experimental and qualitative findings suggest that blogs can be used as supplementary mediums to promote achievement and knowledge acquisition of students as well as information searching and sharing skills within a learning community.

Keywords: Blogs, achievement, knowledge acquisition, information sharing, instructional technology, pretest-posttest experimental design with a control group, qualitative research, interviews, observations, Turkish undergraduate students.

Introduction

Blogs, also known as Weblogs, have grown in popularity over the past decade. In their early versions, blogs were simply manually updated components of common Web pages. However, the evolution of tools to facilitate the production and maintenance of Web articles posted in reverse chronological order made publishing process feasible to a much larger, less technical population (Wikipedia, 2010). Particularly, a blog can be defined as a Web site which includes dated entries in reverse chronological order about a specific topic, links to other Web sites, and visual (e.g., images, graphics, etc.) and audiovisual materials (e.g., videos, animations, etc.) and sometimes a search facility (Boulos, Maramba, & Wheeler, 2006). In addition, easy to create, edit and use from anywhere with an Internet connection and minimum technical expertise, blogs are a form of Web publishing that has become an established communication medium (Educasuve Learning Initiative, 2005). Early blogs were mostly considered as mediums for the publication of simple, online personal diaries. However, modern blogs have the capacity to engage people in collaborative activity, information sharing, reflection and debate (Godwin-Jones, 2003; Williams & Jacobs, 2004, Educasuve Learning Initiative,

2005, Hsu & Lin, 2008).

Although, originally blogs served as personal journaling tools, recently there has been growing interest in blog use in educational environments (Wang & Hsua, 2008; Piontek & Conclin, 2009). For instance, teachers use blogs as resource centers (Oravec, 2002), teaching and learning aids in a higher-education context (Williams & Jacobs, 2004; Martindale & Wiley, 2005), and communication channels among themselves and students (Wang, Hsua, 2008). Furthermore, blogs are applied to demonstrate students' learning processes and finished products (Langhorst, 2006), to support formation of an online learning community (Kim, 2008), to support collaboration on the Web (Godwin-Jones, 2003) and to expand in-class discussion (Wang & Hsua, 2008; Huetter, 2006). For instance, according to Huetter, (2006), blogs can be used by the students to express their opinions on topics studied in the class, write comments on issues of interest, discuss activities they did in class, write about class topics, and showcase their best writing pieces (Huetter, 2006). Additionally, blogs can be used to build information search and retrieval skills (Williams & Jacobs, 2004; Embrey, 2002) and to improve students' academic writing skills (Kelly, 2008; Tekinarslan, 2008; Johnson, 2004).

Moreover, blogs can be used to facilitate students' learning by allowing them reflective practice due to its innovative and user friendly structure (Stiler & Philleo, 2003; West, Wright, Gabbitas, & Graham, 2006; Luehman, 2008) which allows the students to display and share various multimedia materials (e.g., visuals, audio-visuals) (Boulos, Maramba, & Wheeler, 2006). Hence, blogs can also be applied in fields such as information technology and instructional technology to promote students' learning experiences since they may find opportunities to reflect and practice what they have learned about the basic conceptual and theoretical issues. However, little is known about effects of blogging on students' achievement and knowledge acquisition in issues of instructional technology. Thus, this study focuses on effects of blogging on students' achievement in issues of instructional technology in a computer course. Moreover, the study investigates opinions of students about contribution of blogging to their knowledge acquisition, information searching and sharing skills and opinions of the students about their classmates' comments on their blog contents and blogging skills. the effects of blogging on student achievement levels in instructional technology issues in a computer course. In particular, this study explores whether there is any significant difference between mean achievement-scores of students in the experimental group that blogged on issues of instructional technology and the students in the control group that read on issues of instructional technology without blogging on the issues. Furthermore, this study investigates opinions of the students about contribution of blogging to their knowledge acquisition, information searching and sharing skills, and opinions of the students about their classmates' comments on their blog contents and blogging skills. Specifically, this study explores the following research questions:

1. Is there a significant difference between the mean achievement scores of the students in the experimental and control groups in the pretest?
2. Is there a significant difference between the mean achievement scores of the students in the experimental and control groups in the posttest?
3. Is there a significant difference between pretest and posttest mean scores of the experimental group?
4. Is there a significant difference between pretest and posttest mean scores of the control group?
5. Is there any significant difference between the achievement gain scores of the students in the experimental group and control group?
6. What are the opinions of students about contribution of blogging to their knowledge acquisition, information searching and sharing skills?
7. What are the opinions of students about contributions of their classmates'

comments on their blog contents and blogging skills?

Structure of the course

Effects of blogging on students' achievement in instructional subjects and opinions of students about effects of blogging on students' information gains were investigated in a four credit Computer II course. The course was given during the 2009-2010 Spring semester in the Faculty of Education at Abant Izzet Baysal University, Turkey. The researcher was the instructor of the course. The students in the course were taught basic applications in database management in MS Access during the first four weeks, followed by basic web design applications in MS FrontPage and MS Publisher for four more weeks. In addition, Web 2.0 technologies (e.g., blogs, wikis) were introduced and blog applications took place during the last four weeks of the course.

Students were expected to create, edit and publish their own blogs in Turkish after they were taught blog applications in a blog publishing service named Blogger (www.blogger.com/start?hl=tr) that allows users to publish blogs in various languages including Turkish. Also, one of the purposes of the course was to introduce instructional technology subjects (e.g., basic concepts related to instructional technology, place and importance of instructional materials in teaching and learning environments, principles in effective uses of instructional technologies and materials, etc.) to the students. The students in the experimental group were required to read about some issues of instructional technology and then publish their blogs with content in these issues. The students in the control group were also required to read the same issues in instructional technology, but they were asked to publish their blogs about other subjects in education (i.e., special education) with which they are familiar.

Methods

The methodological framework of this study is based on a pretest-posttest experimental design with a control group (Karasar, 2005) and qualitative research techniques including interviews, document analyses and observations (Bogdan and Biklen, 1992).

The pretest-posttest control group model

Participants

Two groups of students (N= 57 and N=55) in the Special Education department registered for the Computer II course 2009-2010 Spring Semester. An experimental group consisting of 34 students (12 males and 22 females) and a control group consisting of 34 students (14 males, 20 females) were set up among the students randomly and on a voluntary basis to investigate the effects of blogging on the students' achievement in issues of instructional technology. The students in both groups had not taken any course related to instructional technology prior to this study. In addition, they were not going to take any other course about the subjects during the Spring Semester of 2009-2010 academic year.

Research Instrument

An achievement test in instructional technology subjects, developed by the researcher, was used to assess the students' achievement in the pretests and posttests. The development procedure of the achievement test in instructional technology subjects is explained in detail in the following section.

Development of the Achievement Test

Initially, 40 multiple choice items were written by the researcher in order to measure the achievement of students in instructional technology subjects such as basic concepts related to instructional technology, place and importance of instructional materials in teaching and learning environments, selection of appropriate instructional technologies in teaching-learning environments, design principles of visual materials, principles in effective uses of instructional technologies and materials, and basic concepts and

technologies in distance education. The researcher benefited from two textbooks (Yalin, 2004; Demirel & Altun, 2007) in instructional technology when writing the items of the achievement test. The test items were at knowledge and comprehension levels of cognitive domain in Bloom's taxonomy.

The achievement test in instructional technology with 40 multiple choice items with five choices was applied to a pilot group (N=71) at the Faculty of Education in three different programs (i.e., Computer Education and Instructional Technology, Science Education, and Classroom Teaching). After that, the Iteman software package was used to analyze difficulty levels and discrimination powers of the 40 items. The items with lower than .30 discrimination power were considered to be insufficient. Thus, 4 items out of 40 were excluded from the test. As displayed in Table 1, the KR-20 reliability of the retaining items (N=36) was found to be 0.82, average difficulty of the items (mean P) was found to be 0.53, and average discrimination power of the items (mean biserial) was found to be 0.47. As a result, it can be stated that the test with 36 items has a sufficient reliability score, difficulty level and discrimination power to assess students' achievement in instructional technology.

Table 1
Pilot test results of the achievement test

Number of Examinees	Number of Items	Mean (\bar{X})	Std. Dev. (SD)	KR-20	Mean P	Mean Biserial
71	36	53.04 (19.08 * 2.78)	6.63	0.82	0.53	0.47

Procedures

A pretest and posttest experimental design with a control group was used to find differences between the achievement levels of the students (N=34) who read and blogged on subjects of instructional technology in the experiment group and the students (N=34) who just read on subjects of instructional technology in the control group.

Both experimental and control groups were administered a pretest (i.e., achievement test) before the experimental process to assess their prior knowledge in instructional technology subjects. After that, the instructor taught technical aspects of creating, editing and publishing blogs in both groups, but he did not teach conceptual or theoretical subjects related to instructional technology in either of the groups. However, he required the students in both groups to read the five issues of instructional technology in the two text books. Moreover, they were free to read and benefit from other reliable additional online and written documents about the issues of instructional technology. The students' learning of the issues in the control group was based only on reading. But, students' learning of the issues in experimental group was based on both reading and blogging on the same issues. The students were required to blog on the issues by using at least 1500 words. They were allowed to benefit from visual and audio-visual materials. The students in the control group were required to create and publish blogs as well, but they had to blog on subjects which they were familiar with (e.g., special education) other than instructional technology. Also, the students in both groups were supposed to e-mail the instructor their blog addresses after publishing their blogs.

In addition, the students in the experimental and control groups were required to make comments about each others' blogs and blog contents. Each student had to make comments on the blogs of at least two other students after receiving the blog addresses of their group mates from the instructor through an e-mail attachment. The students

were supposed to read the documents and complete their blogs and comments in four weeks. Then, the same achievement test that was used as pretest was also administered as a post-test to both groups after the experimental process.

Data analyses

The data obtained from the pretests and posttests were analyzed by the software program of Statistical Package for the Social Sciences (SPSS). The mean scores and standard deviations were calculated for each group. The t-test was used to determine the differences between the experimental and control groups.

Qualitative Method

Participants

The participants in the qualitative section of the study were the same students in experimental (N=34) and control groups (N=34). Moreover, 21 students (10 males, 11 females) from the same groups voluntarily completed an interview form to provide additional data about their blog experiences.

Data collection

The qualitative method of this investigation was based on fieldwork approach (Bogdan and Biklen, 1992) which incorporated a number of data gathering techniques including interviews, document analyses, and participant observations to analyze blogging experiences of the undergraduate students.

Participant observation

The researcher, who was the instructor of the course, had opportunities to observe students in a computer lab as the students created, edited, and published their blogs. The researcher took notes about any notable blog activities of the students in the computer lab.

Document analysis

The students in both groups e-mailed the instructor the contents and URL addresses of their blog pages. These e-mails, e-mail attachments and blogs of the students were electronically documented for analysis.

Interview

The students were requested to participate in an interview through e-mail at the end of the course. An interview form containing three questions was administered to get views and thoughts of the voluntary students about blogging. Students were not obliged to provide personal information on the interview form. The participant students (N=21) submitted their interview forms through email attachments within two weeks. The interview questions are provided in the opinions of students about blogging section.

Data analyses

The collected data (i.e. blog documents, email attachments, observations, interview forms) were stored in electronic files. The researcher assigned pseudonyms to the interview forms of the participant students. Content analysis method (Bogdan & Biklen, 1992) was used to analyze the data. The researcher reviewed the data (e.g., blog documents, email attachments, observations, responses of the students) to identify recurring words, phrases, and thoughts, which were subsequently identified as the initial coding categories. Also, the unrelated data were eliminated during the coding process. Then, these coding categories were read again to generate main categories of the study. Finally, the findings were reported in accordance with the main categories.

Results

Experimental and Control Groups on Pretest

An independent sample t-test was applied to determine if there was any significant difference between the mean achievement scores (\bar{X}) of the experimental and control groups on pretest at a significance level of .05. According to the results in Table 2, the difference between the mean scores of the experimental group (31.20) and control group (29.65) was found to be insignificant ($t = .853$, $df = 66$, $p = .397$). Thus, both groups could be treated as equal based on their pretest scores.

Table 2
Significance of the difference between mean scores of the experimental and control groups on pretest.

Groups	N	\bar{X}	SD	df	t	P
Experimental	34	31.20	6.26	66	.853	.397
Control	34	29.65	8.56			

$P < .05$

Experimental and Control Groups on Posttest

The independent sample t-test was conducted again to detect if there was any significant difference between the mean achievement scores of the experimental and control groups on posttest. The results in Table 3 indicate that there was a significant difference between the mean scores of the experimental group (48.28) and control group (37.17) ($t = 6.837$, $df = 66$, $p = .000$). According to this finding, it can be stated that the performance of the experimental group on posttest was better than the control group. Moreover, this finding revealed that blogging on the issues of instructional technology affected the performances of students notably in a positive direction and they demonstrated significantly higher achievement levels than the students who just read the issues of instructional technology.

Table 3
Significance of the difference between mean scores of the experimental and control groups on posttest

Groups	N	\bar{X}	SD	df	t	P
Experimental	34	48.28	6.01	66	6.837	.000*
Control	34	37.17	7.33			

* $P < .05$

Experimental Group on Pretest and Posttest

A paired samples t-test result indicated that there is a significant difference between the pretest (31.20) and posttest (48.28) mean scores of the experimental group ($t = -12.571$, $df = 33$, $p = .000$) (see Table 4). The students had notably higher scores in the posttest than in the pretest phase. Thus, it can be stated that blogging affected the achievement of the students in the issues of instructional technology positively at the .05 significance level.

Table 4
Significance of the difference between mean pretest and posttest scores of the experimental group

Tests	Experimental Group			df	t	P
	N	\bar{X}	SD			
Pretest	34	31.20	6.26	33	-12.571	.000*
Posttest	34	48.28	6.01			

* $P < .05$

Control Group on Pretest and Posttest

With reference to the paired samples t-test results in Table 5, there is a significant difference between the pretest (29.65) and posttest (37.17) mean scores of the control group ($t = -13.813$, $df = 33$, $p = .000$). Based on this finding, it can be stated that reading on the issues of instructional technology positively affected the students' academic achievements in the issues. However, their mean score achievement on posttest is not satisfactorily high.

Table 5
Significance of the difference between mean pretest and posttest scores of the control group

Tests	Control Group			df	t	P
	N	\bar{X}	SD			
Pretest	34	29.65	8.56	33	-13.813	.000*
Posttest	34	37.17	7.33			

$P < .05$

Experimental and Control Groups on Achievement Gain Scores

The findings in Table 6 indicates that the students in the experimental group had mean scores between $\bar{X} = 31.20 \pm 6.26$ and $\bar{X} = 48.28 \pm 6.01$ respectively on pretest and posttest. The control group had mean scores between $\bar{X} = 29.65 \pm 8.56$ and $\bar{X} = 37.17 \pm 7.33$ respectively for pretest and posttest. The mean achievement gain scores are $\bar{X} = 17.07 \pm 7.91$ and $\bar{X} = 7.51 \pm 3.17$ respectively for experimental and control groups. The difference between the mean achievement gain scores is significant in the favor of the experimental group ($t = 6.533$, $df = 66$, $p = .000$). According to this result, the mean achievement gain score of the students who blogged on the issues of instructional technology is significantly higher than that of the students who just read about the issues of instructional technology.

Table 6
Significance of the differences between the mean achievement gain scores
of the experimental and control groups.

Groups	Pretest			Posttest		Achievement Gain Score		t	P
	N	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD		
Experimental	34	31.20	6.26	48.28	6.01	17.07	7.91	6.533	.000*
Control	34	29.65	8.56	37.17	7.33	7.51	3.17		

$P < .05$

Opinions of Students about Blogging

The students' opinions about blogs were presented in three categories which were generated during the analysis of the qualitative data: The opinions of the students about contribution of blogging to their knowledge acquisition, opinions of the students about contribution of blogging to information searching and sharing, and opinions of the students about contribution of their classmates' comments to their blog contents and blogging skills.

Opinions of students about contribution of blogging to their knowledge acquisition

The interviewer asked, "Do you think that blog publishing has made any contribution to your knowledge related to the subjects that you blogged on? If yes, what is the subject that you acquired the most knowledge about and how?" Most interviewees (18 out of 21) reflected that blogging made contributions to their knowledge in the related subjects (i.e., instructional technology, special education). Eight interviewees among them thought that blogging contributed to their knowledge especially when they blogged and shared their findings and readings about the subjects. For instance, one of the interviewees, Ebru, stated "*Yes I think it [blog publishing] made contributions to my knowledge about instructional technology subjects. Particularly, I acquired most knowledge about place and importance of instructional materials and tools in educational environments when I was writing my blog content and reading blogs of other friends with the same content*". Moreover, another interviewee, Selma, responded "*Yes I think it contributed to my knowledge in instructional technology, because I had a chance to write about and share what I learned through reading about a selection of appropriate instructional technologies in teaching-learning environments*".

In addition, five students responded that blog publishing gave them an opportunity to repeat and reflect on what they learned through their readings about issues of instructional technology. For example, Sinan noted "*Yes I think my knowledge in instructional technology increased through blogging. I at least found a chance to review and repeat what I learned from my readings*". Similarly, Ceyhun stated "*Yes I think it [blogging] contributed to my knowledge in the issues of instructional technology because it gave me an opportunity to repeat and reflect on what I learned while reading about the issues*".

Moreover, three interviewees thought that they practiced some theoretical principles in instructional technology when they were blogging on the subjects. For example, Serap, stated "*Yes I think it contributed to my knowledge about the principles of effective uses*

of instructional technologies and materials. Also, I practiced some principles that I learned from my readings while I was blogging on the subjects".

On the other hand, two students noted that, although their knowledge has increased through blogging on subjects in instructional technology, it would have been more beneficial for them if they had options to blog on other subjects that they specifically prefer. For instance, Zeki stated *"Yes, I think my knowledge about basic concepts and technologies in distance education has increased through blogging. However, I think it would have been more helpful for me if I had been free to choose another subject that I am interested in to blog on"*.

Nevertheless, three students in the control group thought that although they had opportunities to repeat what they learned previously blogging has not made any notable contribution to their knowledge in the area of special education since they already know most of the subjects that they blogged on. For example, Deniz stated *"Blogging was helpful to repeat and reflect on what I know in special education but I did not learn so much, because I already learned the subjects in the other courses in special education"*.

The opinions of the students about contribution of blogging to their information searching and sharing skills

The interview question was "Do you think that blog publishing has made any contributions to your skills in information searching, finding and sharing? If yes, in which skill blog publishing has made the most contributions, and how? According to the majority of the interviewees (14 out of 21), blogging made contributions particularly to their information sharing skills. Eleven interviewees reflected that their information sharing skills were positively affected when they developed, organized and published their blog contents with visual or audio-visual materials (e.g., pictures, animations, etc.). For instance, an interviewee, Ceren, noted *"Yes I think my information sharing skills have been improved through blogging in terms of organizing the information that I found and publishing this information with pictures"*. Similarly, Ayla thought that *"Yes I think blogging has made positive contributions to my skills in information sharing, since blogs are convenient tools to combine and share various types of information and materials and I developed and combined my blog content with related pictures and animations which make the content more concrete and attractive, I think"*. Also, Azra, noted *"Yes I think it [blogging] has contributed to my information sharing skills because information sharing through blogs brings more responsibility to bloggers to review the content, correct the expression as well as writing mistakes before publishing it"*.

In addition, three interviewees reflected that blogging contributed to their both information searching and sharing skills when searching and publishing the content. For instance, an interviewee, Melih, stated *"Yes, I think, blog publishing has made contributions to my both information searching and sharing skills. Particularly, I had to look for the books in the library that the instructor suggested and I had to search for information on the Web in order to use in blog content about instructional technology subjects. Also, when I was blogging on these subjects I had to paraphrase and organize what I found. I think these positively contributed to my information searching and sharing skills"*.

The opinions of the students about contribution of their classmates' comments to their blog contents and blogging skills

The interviewer asked "Has your classmates' comments on your blogs made any contributions to your blog contents and blogging skills? If yes, what kind of contributions have they made?" According to the most interviewees, (16 out of 21), their classmates' comments have contributed to their blog contents and blogging skills. However, interview results revealed that most of the contributions were related to blog templates as well as visual and audio-visual materials (e.g., pictures, graphics, animations) on the blogs rather than the conceptual and theoretical information on the blogs. For example, an interviewee, Caner, stated that *"Yes, their comments have contributed to my blog"*

content and blogging skills. I increased the size of the font for readability, and I added more visuals to get the attention of the readers by considering their opinions". Another interviewee, Selim, answered "Yes they have. After reading their suggestions, I changed my blog template and I found and added free pictures from the Web, which increased the quality of the posts, I think". Also, Murat noted "Yes, their comments have contributed to my blogging skills and the content. For example, considering the suggestions of the friends, I replaced the visuals on my blog and I put links to other resources which were related to content that I presented".

Although most interviewees (N=16) thought that their classmates' comments contributed to their blogs, only five of them mentioned that the comments made by the classmates contributed to their blog contents in terms of information on the blogs. For instance, Ebru stated *"Yes, they have. I reviewed my blog contents after reading the comments made by my classmates and found that there were some repetitions of information and some parts of the information was not sufficient. So, I had a chance to improve my blog contents in line with the comments and critics of the classmates".* Another interviewee, Nazli, noted *"Yes, they have. I exchanged ideas with a classmate, added some visuals related to the content, edited and reedited the unclear areas of the posted information by considering the comments of my classmate".*

On the other hand, three interviewees stated that their classmates' comments did not contribute to their blogging skills and blog contents, since nobody criticized their blog contents. An interviewee, Cemil, noted that, *" No they have not contributed to my blog content and blogging skills because non of the comments were critical and I did not change anything on my blog".* In addition, two interviewees stated that their classmates' comments have not contributed their blog contents or blogging skills since they did not receive any comments or critics on their blogs.

Observations of Instructor

The students created and published their blogs without any major difficulty after they were taught how to create, edit and publish blogs although a few students faced difficulty when they were creating a URL address for their blogs since they used the characters in the Turkish alphabet. Some students faced minor difficulties when editing the blog content (i.e., editing text and removing some visuals, etc.) and sought help from the instructor. Most students easily created, published and edited their blogs, and they enjoyed blog activities and they especially became happy after viewing their published blogs on the web.

On the other hand, content development part of the blog publishing was not very favorable for some students and they requested to be free to choose the blogs topics and contents that they are interested in. Also, many students preferred to use mostly online resources about the subjects when writing their blog contents. However, the resources that they used when developing their blog contents affected their performance in the achievement test. The students who benefited mostly from reliable online and print resources suggested by the instructor usually took higher scores since the test items were based on these resources. For instance, the students (N=15) in the experimental group who used mainly the suggested reliable resources obtained higher scores, which differ between 50 and 61.1, than the other students. However, some students (N=3) who mostly copied and pasted the information into their blogs from online resources instead of paraphrasing took the lowest scores (i.e., 38.89, 41.67). As a result, based on the observations of the instructor, blogs are easy-to-use tools for students and they can be effective supplementary tools in teaching and learning environments if used in accordance with the purposes the course and suggestions of the instructor.

Discussion and Conclusion

The purpose of this study was to investigate effects of blogging on academic achievement of the students in issues of instructional technology, and opinions of

students about contribution of blogging to their knowledge acquisition, information searching and sharing skills as well as about their classmates' comments on their blog contents and blogging skills. According to the experimental results, there was no significant difference between the mean achievement scores of the students in the experimental and control group on pretest. However, the results indicated that the posttest mean scores of the experimental group, whose learning was based on reading and blogging, and control group, whose learning was based on only reading, were significantly higher than those of the pretest. These findings suggest that both reading and blogging were effective on achievement levels of students in issues of instructional technology. On the other hand, the results indicated that mean achievement score of the experimental group on the posttest was better than that of the control group. Moreover, the experimental results revealed that the mean achievement gain score of the students who read and blogged on subjects of instructional technology is significantly higher than that of the students who only read on subjects of instructional technology. According to the experimental results of this study, blogging alongside reading is an effective medium to promote students learning and achievement in the issues of instructional technology. However, the mean achievement scores of both the experimental ($\bar{X} = 48.28$ over 100) and control groups ($\bar{X} = 37.17$ over 100) were not satisfactorily high, although the differences between the pretest and posttest scores of both groups were significant. This can be explained by the lack of teaching facilities on the part of the instructor about the issues in the classroom. Therefore, although reading and blogging can be considered as effective mediums to facilitate students' learning, teaching activities on the issues are also necessary to achieve better learning outcomes.

Moreover, the qualitative findings of this study revealed that blogging contributed to the knowledge acquisition of a considerable number of the interviewees (N=8 out of 21) when they blogged and shared their findings about the issues of instructional technology. In addition, blogging provided some students (N=5) with an opportunity to go over and reflect on what they learned through their readings about the issues. Furthermore, some interviewees (N=3) reflected that they found chances to practice some theoretical principles in instructional technology when they were creating and publishing blogs. The findings of this study regarding the contribution of blogging to students' knowledge acquisition and reflective practice are consistent with the prior studies (Stiler & Philleo, 2003; West, Wright, Gabbitas, & Graham, 2006; Luehman, 2008) which suggest that blogs can be used to facilitate students' learning since they allow them reflective practice due to their innovative and user friendly structures. Additionally, majority of the interviewed students thought that blogging contributed to their information sharing skills when they developed, organized and published their blog contents with various visual materials. Consistent with the related literature (Kosenen, Henttonen, & Ellonen, 2007; Baxter, Connolly & Satsnfield, 2010), these findings suggest that blogs can be used to promote students information sharing skills in a learning community. Moreover, the findings of this study revealed that the comments of class classmates' on the blogs contributed to the most interviewed students' blog contents and blogging skills, which is also the case in the related literature which suggests that blogs can be used to expand in-class discussion, collaboration and corporation in a learning community (Wang & Hsua, 2008; Godwin-Jones, 2003).

To conclude, based on the findings of this study and related literature, easy-to-use blogs can be effective supplementary tools in teaching and learning environments to promote knowledge acquisition of students and to facilitate reflective practice and information sharing in a learning community. However, the findings of the study suggest that additional instructional facilities are needed besides blogging to yield better results in terms of learning and achievement.

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