Pre-service Teachers' Perceptions of the Effectiveness of Multi-Author Blogging: A Quasi-Experimental Mixed Methods Investigation

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Abstract

Multi-author blogs have created new opportunities for the construction and dissemination of knowledge. However, very few studies have examined the effect of multi-author blogging in pre-service teacher education and little is known about this phenomenon. This study argues that multi-author blogging can provide student-teachers with opportunities for experiential learning.

The study adopts a mixed method quasi-experimental design to explore student-teachers' perspectives of the effectiveness of multi-author blogging in the College of Basic Education situated within Kuwait's Public Authority for Applied Education and Training (PAAET). The sample consisted of 63 student-teachers who used multi-author blogging for learning (Experimental Group) and 67 student-teachers who were taught using traditional in-class lectures (Control Group). Questionnaires and focus groups were used to investigate student-teachers' perceptions of multi-author blogging.

Results suggest that a statistical difference between the Experimental Group and Control Group in the second and final exams. Findings also results indicate that a sense of community, peer learning, and perceived collaborative learning significantly contributed to learning through blogging. The conclusion is that multi-author blogging may be a promising approach to enhance student-teachers' learning of instructional technology courses. The study provides insights into opportunities for further studies.

Keywords: *multi-author blogging, experiential learning, collaborative learning, communities of practice, reflection, student perceptions, pre-service teacher education*

1. Introduction

The growing integration of technologies in higher education has reached a tipping point and investments are being made in new and emerging technologies to meet pedagogical demands and to keep up with the needs of a more technology-savvy generation of students (Venkatesh, Rabah, Fusaro, Couture, Varela, & Alexander, 2016). In recent years, Web 2.0 technologies, such as blogs, are being applied in higher education settings and have become one of the most investigated topics (e.g., Stoszkowski & Collins, 2014; Zhang, Song, Shen & Huang, 2014; Ali, Byard, Julich & Kommunuri, 2013; Farmer, Yue, & Brooks, 2008). Although these technologies have the potential to facilitate new approaches of teaching and learning, it is claimed that it cannot enhance learning outcomes by itself (Rabah, 2015; Rabah & Arshad-Ayaz, 2015). Therefore, researchers have explored students' perceptions of the effectiveness of technology used in the classroom (e.g., Venkatesh et al. 2016; Fowler & Thomas, 2015; Nakatsukasa, 2009; van Wyk, 2013; Halic, Lee, Paulus, & Spence, 2010). Multi-author blogs were the chosen medium not only due to its potential for pedagogical interaction and communication but for its social nature (Ette & Stoker, 2015; van Wyk, 2013; Top, 2012), and its usefulness in shifting the traditional power balance in favour of learners, and fostering autonomous learning (Foroutan, Noordin & Hamazah, 2013).

In this study, a mixed methods research methodology is used to illuminate student-teachers' perceptions of the effectiveness of multi-author or group blogs in a higher education institution in Kuwait. The purpose of this paper was to determine if the integration of multi-author blogs and experiential learning activities would prove beneficial for learning educational technology courses. Therefore, the paper applies Kolb's Experiential Learning Theory which provides a solid theoretical underpinning for the use of multi-author blogs in higher education.

2. Literature Review

2.1. Blogging: Origins, Definition and Affordances

In the 1990s and the years following Tim Berners-Lee's invention of the open source "world wide web", the Internet provided a means for interaction between writers and readers resulting in public and communal journals and online personal diaries (Nakatsukasa, 2009). These online diaries and journals were referred to as 'blogs', an abbreviated form of "web" and "log" or a "weblog" (Farmer et al. 2008; Goldstein, 2009). Blogs feature characteristics such as chronological diary entries and allows users to easily and quickly create web pages, edit them and frequently update their blogs (Nakatsukasa, 2009).

> Blogs are defined by Farmer et al. (2008) as:
> "… a contraction of 'web-based logs' or 'weblogs' … essentially online journals where an author … publishes a series of chronological, updateable entries or posts on various topics, typically of personal interest to the author … and often expressed in a strongly subjective voice, on which readers are invited to comment." (p. 1)

It is claimed that new and emerging technologies, such as smart phones and tablet computers, are constantly evolving and re-conceptualising teaching and learning, and offering educationalists opportunities to create new environments for engaging with their students (Groff, 2013). Blogs are one of the e-learning tools that are being used in higher education as they empower students to actively construct knowledge through interaction and online communication (Ette & Stoker, 2015; Ferguson, Makarem & Jones, 2015). Given the potential of technologies and the popularity of blogging as a common form of communication, teachers have found ways of harnessing its potential as a teaching tool (Stoszkowski & Collins, 2017).

Although current research considers that blogs are related to social media and social network sites (Rettberg, 2014), there is growing interest in blogging in the context of education as it is claimed to impact teaching and learning (Ette & Stoker, 2015; Fowler & Thomas, 2015; van Wyk, 2013; Park, Helo, & Lee, 2011). The two varieties of blogs used in education are single-author and multi-author blogs. In this review, the term 'multi-author' blog is used interchangeably with 'group' or 'collective' or 'collaborative' or 'community' blogging. In the field of education, group or multi-author blogs are being integrated for writing, researching, interpreting, communicating, reflecting, problem solving, collaborating, sharing ideas, and expressing individual or group voice (van Wyk, 2013). Single-author or individual blogs are accessible only by a student author and the lecturer while multi-author blogs are accessible by all students in a class and the lecturer (Macduff, 2009). However, most literature refer to blogs as belonging to the single-author variety in spite of the increase in the use of multi-author blogs in education (Hearst & Dumais, 2009). One of the benefits of multi-author blogs is that they are considered to be have longer posts on average (Mawson, 2017). This affordance of multi-author blogs to ensure continuity of content suggests that different authors can provide quality content to readers.

According to McLoughlin and Lee (2010), "blogs were originally designed to allow individuals to maintain their own personal journals or diaries and make them available for public viewing" but "shared or multi-author group blogs have found numerous uses...to support learning" (p. 23). Multi-author blog or collective blogs are also claimed to be a hybrid way for individuals in a community to interact with one another and share ideas (Hearst & Dumais, 2009). There is also consensus among researchers (for example Ferguson et al. 2015 and Farmer et al. 2008) that multi-author blogs are designed to help students to engage with reflection and to improve their learning. Some of the challenges of multi-author blogs is that some authors may post more content and dominate the discussion (Hearst & Dumais, 2009), and that they may take time to edit the contribution (Mawson, 2017). However, shared or collective online blogs or multi-author blog blogging can facilitate the development of connections between formal and informal contexts (Stoszkowski & Collins, 2017; Park et al. 2011). This view defines informal learning as self-directed or intentional and that which is not teacher-driven or involves criterion-based assessment (Lai, Khaddage & Knezek, 2013). Stoszkowski and Collins (2014) are of the opinion that learners who blog in groups can share their opinions and learning experiences and use this informal platform to use a focused and critical approach to co-construct professional knowledge.

2.2. Perceptions of the effectiveness of Multi-Author Blogs as an E-learning tool

This research presumes that it is important to find out students' experiences, their expectations, and their perceptions to examine the effectiveness of group or multi-author blogging. In a recent study, Kuo, Belland and Kuo (2017) used a mixed method approach to investigate students' perspectives of learning when using blogs at a university in the southern United States and found that students displayed positive attitudes toward the use of

blogs and group learning experiences. Similar findings were reported in studies from the United States. For example, Fowler and Thomas (2015), who investigated students enrolled in two consecutive semesters of Marketing Management sections found that most students (90%) perceived that incorporating blogs with teaching can enhance their learning experience. However, the study also found that there were differences in learning effectiveness based on students' learning style and gender.

Ali et al. (2013) explored the use of blogs as perceptions of blogs as an assessment tool in a first year Bachelor of Business programme in Auckland, New Zealand. In the quantitative study, online questionnaires were administered to 350 students to find out the ease of use of blogs and its impact on learning and skills development. Like in the case of other studies reviewed earlier, the students in this study from New Zealand also had positive attitudes towards blogs. They reported that the affordances of blogs allowed them to submit their work easily, empowered them to take ownership of learning, and regulate as well as improve their learning on a regular basis. They also reported that blogs provided flexibility in completing assignments, prompt and speedy lecturer feedback immediacy, and increased the quality and quantity of their work. However, there were differences in the judgment or opinions of the teachers as to whether blog could improve writing ability of students, increase discourse between students and lecturers or increase students' level of interest in learning. Foroutan, Noordin, and Hamazah (2013) examined the effect of using Weblog on students' writing autonomy in a Malaysian higher education institution. They found that blogs promoted autonomy in learners. Group or collective blogging enabled the students to easily publish their writings and exchange ideas. Moreover, the students were content with unlimited storage space, who found the independence and freedom to publish or exchange comments as key elements which were absent in traditional teaching and learning approaches. This study upholds the conclusions of earlier studies, especially that of Ali et al. (2013), which have all reported positive student perceptions

In the Middle East, there is a lack of research on the effectiveness of blogs in education. There are very few studies that have focused on pre-service teachers' perceptions. For instance, Al Waely and Aburezeq (2013) explored pre-service Arabic language teachers' perceptions of the effectiveness of blogs as a learning tool in the United Arab Emirates. The qualitative findings suggest that blogs enhanced collaborative learning as the pre-service teachers were able to actively interact with the instructor, peers and course content. However, the student-teachers reported that they needed a higher level of technological skills. Another study which focused on students' perceptions is that of Fageeh (2011) who wanted to identify the effectiveness of blogging in developing writing skills and improving attitudes towards English learning in a college in Saudi Arabia. The study used an experimental research method and a descriptive research design, and the results indicated that the students perceived blogs as a helpful tool for developing their writing proficiency and their attitudes towards writing. The findings seem to uphold the results of other studies (for example, Ali et al., 2013; Foroutan et al., 2013) that blogs provided students with the opportunity to freely express their ideas and thoughts as well as to interact with peers and lecturers.

Overall, the literature on learners' perceptions of blogging shows that they had a positive attitude towards blogging. It also reveals that pre-service teachers' perceptions can provide important insights on blogging as an effective learning tool and might lead educators to create and integrate flexible and interesting blogging activities.

2.3. Perceptions of Multi-Author Blogs as a tool for Reflection
Research has indicated that blogs, both individual and multi-author, afford the opportunity to enhance students' critical reflection (for example Ferguson et al. 2015, Deng & Yuen, 2011 and Farmer et al. 2008). This section reviews literature to find out if students' perceive blogs as a tool for reflection.

Ette and Stoker (2015) investigated the use of blogs as a learning tool by interviewing journalism students in the United Kingdom to gain understating of their blogging experience. The analysis of the qualitative data revealed that the students who worked in groups viewed blogs as a space where they could practice what was taught in class. The positive feedback they received empowered the students and they became more analytical and critical of their work in response to remarks from their peers. The findings also indicate that the students had a better understanding of their learning through blogging when they were encouraged to formally reflect on that learning. These findings corroborate the results of another study from Malaysia and Taiwan. Krishnaiyer, Mushahar and Ahmed (2012) investigated the extent to which blogging can facilitate students' reflection in a higher education institution in Malaysia. The mixed methods study found that blogs facilitated reflection as it helped create a community or learners and allowed them to establish relationships with others in the group and explore in-depth about what they were learning. However, the study also found that students need guidance on how to better

structure their reflections. Yang (2009) explored the use of blogs to improve critical reflection by collecting qualitative data from 43 student teachers, who were learning to teach English for future employment in Taiwan. The study found that the blogs were a valuable tool for reflection and communication with others.

All the literature reviewed in this section corroborate each other and confirm that blogs can facilitate positive learning experiences among students through reflection-oriented learning processes (Park et al. 2011).

2.4. Perceptions of Multi-Author Blogs as tools to support Collaborative Learning

The social nature of blogging, whether it is single-author or multiple author, appears to support that blogging can enhance collaborative learning (van Wyk, 2013; Top, 2012). For example, Kuo, Belland and Kuo (2017) investigated the relationships between learners' blogging self-efficacy and perceived collaborative learning and found that students perceived collaborative learning to significantly contribute to learning through blogging. The use of a group blog fostered collaborative learning and helped students gain both knowledge and skills through communication and idea sharing. These findings substantiate the results of previous studies which claim that in blog-supported environments, students are keen on sharing information, exchanging ideas and collaborating (Kiliç, & Gokdaş, 2014; Top, 2012) as well as enhancing peer support and interaction (Chang & Chang, 2014; Laal & Laal, 2012).

Zhang et al. (2014) used a mixed method design to investigate the pedagogical affordances of blogs for group collaborative writing in a English language classroom in China and collected data from 36 students. The results showed that peer feedback had a statistically significant positive correlation with learners' motivation, collaboration, and course satisfaction. The findings also revealed that the feedback enhanced students' self-reflection and self-confidence in English language writing. The study concludes that group work in blog-supported environments can encourage collaboration and in the co-construction of knowledge.

Studies have also reported that students also have negative attitudes toward collaborative learning in blog-supported environments. Nakatsukasa (2009) investigated students' perceptions of the use of a collaborative blog in an English as Second Language classroom including their attitudes and development of writing fluency at a large Midwestern university in the U.S. The data were collected from the collaborative blog, reflective diaries of collaborative blogging, and questionnaires. The students in the study had mixed attitudes towards and preferences for group blogging. Those who had negative attitudes toward collaborative blogging tended to show positive attitudes toward individual blogging.

Lack of feedback is another issue with collaborative blogging or when student work in groups. This is because not all students may read other students' postings or make comments. For example, Deng and Yuen (2011) found that more than half of the blog postings received no feedback from other students. On the other hand, McLoughlin and Lee (2010) found that students did not provide feedback to their allocated partner, and instead responded to only those other students whom they shared common interests with as they were to their allocated partners' postings.

Jackling, Natoli, Siddique & Sciulli (2015) evaluated the capacity of blogs to facilitate reflection among students as part of collaborative group learning in an Australian higher education institution. Student perceptions towards blogs indicate that although blogs were an interactive and reflective learning tool, they were disappointed working in groups. They were averse to working with or giving suggestions to members of the group who they considered to be free riders. Findings also revealed that there was a lack of engagement with the blogs as the students were unhappy with the percentage mark that was awarded for the group assessment component of the assignment.

In spite of the negative perceptions, group blogging is not only collaborative but also learner-centered as it allows students to work together to accomplish common goals (Laal & Laal, 2012). This sharing and construction of knowledge in a collaborative learning environment is the core of social constructivist theory, which posits that it is dialogic interactions which help the development of knowledge (Vygotsky, 1986, 1987).

2.5. Perceptions of Multi-Author Blogs as online Communities of Practice

Multi-author blogs are claimed to help create Communities of Practice (Wenger et al., 2009). Communities of Practice are considered to be conduits that enhance participation, learning and collaboration, and the promotion of new practices (Sanchez-Cardona, Sanchez-Lugo & VZlez-Gonzale, 2012). It involves learners working in groups, sharing knowledge, beliefs and values (Lave & Wenger 1991). Wenger et al. (2009) described blogging as "a public journaling technology" which "gives people new ways to discover what they have in common,

possibly leading to the formation of new communities" (Wenger et al., 2009, p. 4). Researchers who examined students' perceptions of multi-author blogs claim that the technology promotes communities of practice as students actively participate in and engage with the wider learning community (Mawson, 2017; Hearst & Dumais, 2009).

Fitzpatrick (2014) investigated the use of an interactive class blog with a group of undergraduate music education students in the United States. Blog posts, surveys, and a researcher journal were analysed, and results demonstrate that the blogs helped develop virtual community which aligned with Wenger's community of practice model. The study also found that within the community students interacted and shared resources.

van Wyk (2013) explored the use of group blogs to foster e-learning communities in empowering and supporting student-teachers who were learning to teach Economics in South Africa. The student-teachers' perceptions of blogging suggest that technology promoted good relationships amongst student communities, supported idea and information exchange, provided opportunities for dialogue and collaboration.

Killeavy and Moloney (2010) examined the potential of collective or group blogs in supporting reflective writing in Ireland. Trainee teachers who had just completed a teacher induction programme. The researchers used mixed methods to investigate participants' use of an electronic personal reflective diary. The teachers were asked questions on how they maintained their blogs and to reflect on areas of practice and experiences. The study found that the blog supported the development of a community of peers but did not find any evidence of reflective writing.

Halic, Lee, Paulus and Spence (2010) investigated whether the use of group blogs in an undergraduate nutrition course would enhance students' perceived learning in the United States. Students who took part in blog conversations responded to a survey. The study found that students believed that blogs created a sense of community which in turn enhanced their learning. However, only a few students perceived value in peer comments. This finding upholds the results of previous studies which had found that blogs can enhance sense of community by increasing participation, engagement, and interaction in classroom or online learning (Cuhadar & Kuzu, 2010; Yang, 2009). Blanchard (2004) argues that sense of community includes feelings of membership or belonging to a group (or identifying with a community), feelings of having influence on, and being influenced by the community, feelings of being supported by members of the community while also supporting them.

Overall, the literature reviewed here suggests multi-author or group blogs have the potential to support virtual communities or communities of practice

2.6. Gaps in literature
There is little research focusing on Arab students' perceptions of learning experiences with blogs, especially multi-author blogs. These online blogs are considered to be pedagogical tools that have the potential to strengthen and promote critical thinking, reflection, sense of community and collaboration. Although previous research has investigated blogs and its use they have not looked at students' perception of the effectiveness of multi-author blogs. This study is unique as it takes an initial foray into understanding the effectiveness of multi-author or group blogs. Moreover, research evidence and theoretical frameworks for their use is inconclusive and currently lacking. To fill these gaps, the present study examines student teachers' perceptions of the effectiveness of multi-author blogs. The purpose of the present study was to address these gaps by utilising a quasi-experimental design to examine differences in the perceptions of students who use multi-author blogs (experimental group) and those who did not use multi-author blogs (control group).

2.7. Theoretical framework: Kolb's experiential learning model
Experiential learning theory postulates that learning is "the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience" (Kolb, 1984, p. 41). This definition suggests that experience is key for learning and that reflection is an integral part of that process. In other words, experiential learning develops knowledge and skills through hands-on experience. Therefore, as a process, experiential learning can be considered to be constructivist in nature. Learning develops through a process of inquiry and reflection as well as during interactions with multiple authors who are all interested in the same topic (co-construction). Lecturers also have the opportunity to assist and perhaps enhance the reflective processes of the students.
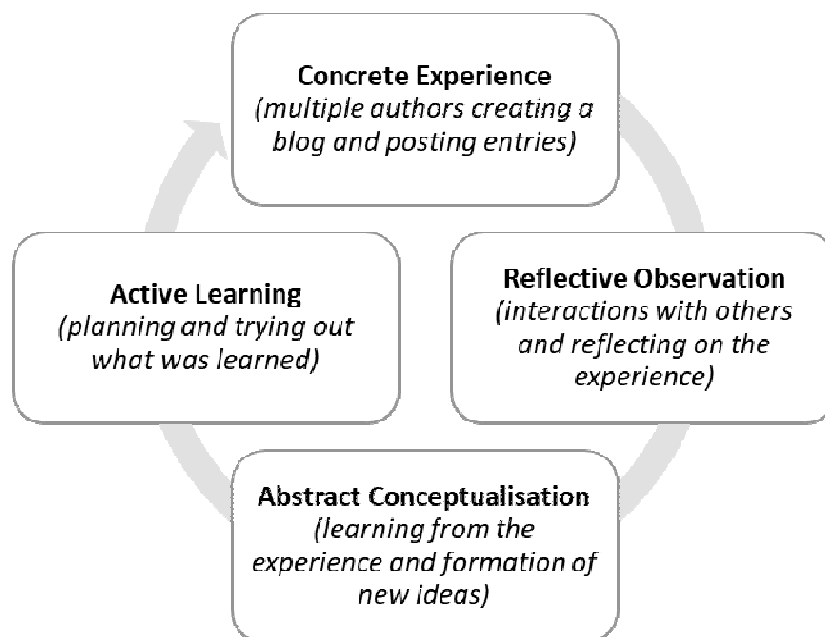
Figure 1: Kolb's cycle of experiential learning (Kolb, 1984)

The figure above depicts Kolb's cycle of experiential learning which shows that learning occurs when learners in a group engage in a cyclical process (Kolb & Kolb, 2005). Multiple students who author blogs begin learning with a concrete experience. They create a blog based on previous experience and reflect on it (reflective observation) during interactions with members of the group. The stage when ideas and techniques are developed is called abstract hypotheses or conceptualisation which leads to active learning or new blogging experiences. According to Kolb, Boyatzis and Mainemelis:

> "Immediate or concrete experiences are the basis for observations and reflections. These reflections are assimilated and distilled into abstract concepts from which new implications for action can be drawn. These implications can be actively tested and serve as guides in creating new experiences." (p. 228)

It can therefore be assumed that multi-author blogging is a reflective process which facilitates student learning. When blogging, some experience is essential for learning to take place. It also involves active participation or interaction on the student's behalf.

This study is unique as it incorporates Kolb's experiential learning model. It argues that multi-author blogging can provide opportunities for experiential learning.

3. Research Context

This study was conducted in the setting of a teacher education programme during the second term of the academic year 2018-2019 at the Department of Educational Technology situated within PAAET's College of Basic Education. The College of Basic Education offers a bachelor's degree in Education (Teaching) and all programmes offered are of four-years' duration and include three main components: cultural, academic and professional (Almodaires, 2009).

The course 'Introduction to Educational Technology (IET-112)', which consisted of 15-20 sections per semester, was mandatory and was embedded within the curriculum for all programmes offered at the College. It comprised of face to face lectures and included task-based course books, but the lecturer had the option of using and adapting the materials and technology in accordance with the learners' needs. The student-teachers registered on the IET-112 course share similar demographics, such as gender, age, nationality and educational background.

4. Design and Procedure

4.1. Research Design

A mixed method study protocol, using a quasi-experimental design was adopted to evaluate the causal impact or association between a randomly assigned intervention and the outcome of the experiment (White & Sabarwal, 2014). Although there are are three types of quasi-experimental designs namely interrupted time series designs, designs with control groups, and designs without control groups (Handley, Lyles, McCulloch & Cattamanchi, 2018), the current research used a control design. The rationale for adopting this design in the present study was that the researchers did not wish to randomly assign the research participants to either the Experimental Group [EG] or the Control Group [CG]. However, courses were selected at random and assigned to the EG, but not the CG.

Focus groups, a qualitative strategy, was used to explore student-teachers' perceptions of multi-author blogging, its implementation for the course, and the perceived impact of the intervention. The rationale for using focus groups was to generate new ideas on multi-author blogging and provide a deeper understanding of the research aims. Focus group interviews were conducted among the student-teachers belonging to the EG and an inductive thematic analysis was undertaken.

Overall, this mixed method quasi-experimental design involved the collection, analysis, and mixing of quantitative and qualitative data in a single study. The data for this analysis, generated through experiments, questionnaires and focus groups, were mapped into Kolb's learning cycle and analysed within a framework underpinned by the notion of experiential learning.

4.1.1. Research Questions and Methods

Three methods were used in this study to find answers to the research questions (Table 1). These methods included conducting an experiment to find out the effectiveness of the multi-author blogging model, administering questionnaires to investigate student-teachers' perceptions of this approach for learning and using focus groups to elicit in-depth information on the usefulness of the model as well as the challenges they faced when running and managing the blogs.

Table 1: The research questions and methodology applied in this study

	Research Question	Methods
1	Is there a significant difference in student-teachers' learning outcomes when a multi-author blogging model (experimental) is used, as compared to a traditional instructional approach (control)?	Experiment - *t*-test
2	How do student-teachers perceive the use of the multi-author blogging model in terms of its usefulness for learning?	Questionnaire - Descriptive statistics Questionnaire open-ended responses - Thematic analysis
3	In what ways were multi-author blogging helpful or challenging to the student-teachers?	Focus Group - Thematic analysis

4.1.2. Sampling

Student-teachers were selected using criterion-based purposive sampling for both the experiment (EG and CG), as well as for the questionnaire and focus groups. This type of sampling refers to "choosing settings, groups, and/or individuals because they represent one or more criteria" (Collins, Onwuegbuzie & Jiao, 2007, p.272). Details of the sample are tabulated below:

Table 2: Sample

Research instrument	Sample size
Experiment	EG (*N*=63)
	CG (*N*=67)
Questionnaire	EG (*N*=63)
Focus groups	EG (*N*=63)
	7 groups each of 9 student-teachers

A total of 63 student-teachers were assigned to the experimental group while 67 were selected for the control group. Questionnaires were administered to all the 63 student-teachers in EG. The sample for the focus groups comprised of 63 student-teachers (38 males and 25 females) who attended the interview sessions to voice their perceptions of multi-author blogging.

4.1.3. Ethical Considerations

Ethical considerations are important issues in research and therefore, an information sheet highlighting the importance of the research was distributed to the student-teachers, before asking them to take part in the study. Besides, the participants were informed about the research, most specifically the research instruments and the way the data would be analysed. After explaining the purpose of the study, informed consent forms were employed to negotiate access with the target participants.

The participants were assured that they had the right to withdraw from participation at any time, as well as withdrawing any information that they had provided for this research without being disadvantaged in any way. They were also informed that the information collected from them would be kept confidential. In order to maintain their anonymity, pseudonyms were used. Incentives were not provided to student-teachers for participating in this experiment.

4.1.4. Phase I – The Experiment

The Introduction to Educational Technology course selected for the experiment comprised of three sections and were all taught by the same instructor in three different classrooms. The student-teachers from these three classrooms were required to attend two 90-minute classes weekly. The three sections were selected randomly and assigned to the experimental and control groups. Student-teachers from the three sections studied four chapters throughout the experiment period as shown in Table 3 below.

Table 3: Chapters and course sections assigned to the Experimental and Control Groups

Group	Student-teachers	Classrooms	Sections of the IET-112 Course	Chapters
Experimental Group (EG)	63	From one classroom	Sections One (of three Sections)	Four Chapters
Control Group (CG)	67	From one classroom	Section Two (of three Sections)	Four Chapters

From the above table it is clear that the EG consisted of student-teachers from one classroom and the CG comprised student-teachers from another classroom. The following Table (Table 4) illustrates the experiential learning activities performed during and after class by the two Groups:

Table 4: During and after class activities of the Experimental and Control Groups

Time	Control Group (CG)	Experimental Group (EG)
During class	Traditional lecture format	Group discussion, in-class activities including traditional lectures
After class	Individual home work (each student writes his/her reflection about the lecture on a paper)	Multi-author blogging activities (students of all groups discuss the lecture in the blog)

Multi-Author Blog Creation, Posting and Evaluation

The lecturer introduced the student-teachers (EG) to multi-author blogging and created an account using *Edublogs* which is based on WordPress software. The student-teachers were then asked to access the blog using the account details provided by the lecturer. The student-teachers assigned to the experimental group (*N*= 63) were required to engage in classroom activities that would help achieve experiential learning. The activities included attending traditional lectures, participating in multi-author blogs, classroom discussions and reflecting on the classroom activities. The objective of this approach was to not only acquire knowledge of the topic but also develop skills, and values from direct experiences outside a traditional academic setting. Following were the steps taken by the lecturer and student-teachers in order to frame the multi-author blogs within this learning context.

1. The blog was structured and related to the last classroom lecture, so the student-teachers could write on topics or genres related to the course. The student-teachers were given specific instructions for blog posts.
2. Student-teachers were required to group author the blogs about the last classroom lecture and were encouraged to post ideas.
3. Members of the group read the multi-author blog, made comments on their classmates' posts after each lecture. They were encouraged by the lecturer to reply to comments and discuss with their classmates. The student-teachers use the comment space in the blogs for collaboration and peer review. The comments on the content motivated students to initiated further conversation or engage in peer feedback exchange. The multi-author blog was used for sharing thoughts, coordinating study groups, reflecting on the blog entries sent by their peers, reflecting on the comments received and working on reviews.
4. The lecturer monitored the group activity by accessing the blog for evaluating the student-teachers, for example by grading student-teachers based on promptness (if the postings were made on time) and inaccuracy (missing points). Group leaders assisted the lecturer in monitoring students in each group.

The completion of the blogs served two goals: firstly, for controlling the activities of the EG group and secondly, for guiding the student-teachers, encouraging them to reflect, helping them learn through collaboration and peer feedback, and going through the materials in an organised manner.

The student-teachers assigned to the control group (*N* = 67) did not receive the treatment or the experimental manipulation. Instead, the student-teachers in this group received traditional lecture-discussion instruction, followed by exams that required the students to work with information that was significant for the course. The control group was given homework and the students individually completed the assigned tasks by writing their reflections about the lecture on a paper.

In contrast, for the EG (*N* = 63), the multi-author blogging model was implemented through group discussion and in-class activities. In the classroom, the student-teachers were asked to form groups and participate in a discussion related to the multi-author blogs. The experiential learning activities in the classrooms involved having the student-teachers openly discuss the assigned topic so the entire classroom could hear. Once this portion of the activity was complete, the remaining student-teachers were asked to repeat the activity.

Administering Exams and Comparison of Results of EG and CG

The student-teachers from both the EG and CG were administered three exams during the experiment period. The first exam was administered to both groups after they had completed Chapters One and Two, while the

second exam was administered to both groups after they had completed Chapters Three and Four. In addition, both groups were also administered a final exam covering all Chapters at the end of the semester. The exams were administered to the student-teachers of both groups to ascertain if any progress achieved by the experimental group students could be attributed to using multi-author blog as learning tool.

In order to investigate any differences in student-teachers' learning outcomes, the exam scores for the course were compared. The comparison of the mean scores for the exams addressed the first research question:

Is there a significant difference in student-teachers' learning outcomes when a multi-author blogging model (experimental) is used, as compared to a traditional instructional approach (control)?

An independent sample *t*-test was carried out to compare the exam results of student-teachers who used multi-author blogging (EG) with the results achieved by the student-teachers who only took part in traditional learning (CG). In other words, this statistical procedure allowed pinpointing any significant differences in learning outcomes between the CG and EG. The rationale for using the independent sample *t*-test was to compare the means of the two mutually exclusive groups of student-teachers.

There was no significant difference between the two groups in the first exam. According to the t-test, for the first exam, the null hypothesis was not rejected as the p-value of .864 is greater than the ".05" alpha level (Table 6). There was not enough evidence to suggest a significant difference between the scores of the two groups of student-teachers, $t(128) = -.864$, p > .05 (Table 6).

Table 5: Group statistics – Exam

	Group	N	Mean	Std. Deviation	Std. Error Mean
First Exam	EG	63	7.70	1.38	0.17
	CG	67	7.75	1.77	0.22
Second Exam	EG	63	7.97	1.27	0.16
	CG	67	7.48	1.45	0.18
Final Exam	EG	63	36.94	4.88	0.61
	CG	67	36.42	6.52	0.81

However, the *t*-test revealed a significant difference between the two groups, as the mean scores of the EG were higher than the CG in the second and final exams see Table 5). There was a significant difference between the two groups, for example in the second exam [$t(128) = -.043$, p < .05], and final exam [$t(128) = -.020$, p < .05]. Therefore, the null hypothesis was rejected.

Table 6: Independent sample test

		t	df	Sig. (2-tailed)
First Exam	Equal variances assumed	-0.171	128	0.864
	Equal variances not assumed	-0.173	124	0.863
Second Exam	Equal variances assumed	2.047	128	0.043
	Equal variances not assumed	2.056	127	0.042
Final Exam	Equal variances assumed	2.354	128	0.020
	Equal variances not assumed	-3.869	78	0.000

4.1.5. Phase II: Questionnaire and Focus Groups

Questionnaires and focus groups, that followed the experiment, were considered the most appropriate way of answering the research questions because the aim was to explain student-teachers' experiences of blogging. While the questionnaire allowed for more objective responses, the focus group interviews gave the researchers the opportunity to probe for detailed responses, clarify the statements made by the student-teachers, understand their lived experiences of multi-author blogging and the meaning they made of the experience (Gray, 2014).

Quantitative data

A feedback questionnaire (see Appendix A) was adapted from validated questionnaires developed by Halic, Lee, Paulus, & Spence, (2010) and van Wyk (2013). The questionnaire was administered to the student-teachers to collect information on their perceptions of the effectiveness of the multi-author blogging model, and the sample consisted of all the student-teachers (*N*=63) who belonged to the EG. The five-point Likert scale questionnaire ranging from 'Strongly disagree' to 'Strongly agree' also included one open-ended question. The qualitative component of the questionnaire explored student-teachers' perceptions of advantages and disadvantages of the multi-author blogging model. The questionnaire addressed the second research question:

How do student-teachers' perceive the use of the multi-author blogging model in terms of its usefulness for learning?

Descriptive statistics (means, standard deviation) were used to analyse the questionnaire data. The results of the questionnaire are summarised in Table 7. Total questionnaire response rate was 100% (*N* = 63). Emails and telephone calls as well personal visits helped ensure this high response rate. The descriptive data are presented here in a narrative style under three thematic headings.

Table 7: Descriptive statistics

	Questionnaire items	N	Min	Max	M	SD	Agree-ment % (SA/A)
1	The blog discussions help me to share my knowledge and experience with my peers	63	1	4	1.95	0.97	63.68
2	I believe that incorporating blogs with teaching can enhance my learning experience in general	63	1	3	1.67	0.62	76.79
3	Other students' comments on my blog posts are important	63	1	5	2.52	1.01	47.10
4	Blog discussions help me understand other points of view	63	1	4	1.98	0.92	61.68
5	My point of view has been acknowledged by my peers and/or lecturer	63	1	5	2.29	0.85	65.14
6	Overall using the blog has helped me learn	63	1	4	1.68	0.71	76.21
7	I visit the group blog frequently	63	1	5	2.25	1.27	55.30
8	The blog helps me feel connected to other students in this course	63	1	4	2.35	1.00	50.51
9	Due to class blog, I feel that I am an important part of our classroom community	63	1	4	2.06	0.91	64.03
10	I have been stimulated to do additional readings or research on topics discussed on the blog	63	1	5	2.21	1.03	56.68
11	There is more interaction with other students as compared to my other classes	63	1	5	1.95	0.99	59.92
12	The quality of interaction has increased when using blogs as compared to my other classes	63	1	5	1.95	0.96	68.03
13	Collaborative learning experience in the blog supported environment is better than face-to-face learning	63	1	4	1.83	0.79	68.44
14	I felt part of a learning community in my group	63	1	4	2.02	0.73	67.38
15	I actively exchanged my ideas with group members	63	1	4	2.48	0.86	46.10
16	I was able to develop new skills and knowledge from other members in my group	63	1	4	2.21	0.74	64.56
17	I was able to develop problem solving skills through peer collaboration	63	1	5	2.11	0.88	60.44
18	Collaborative learning in my group was effective	63	1	5	2.08	0.94	54.92
19	Collaborative learning in my group was time consuming	63	2	5	4.14	0.88	3.17
20	Overall, I am satisfied with my collaborative learning experience in this course	63	1	3	1.71	0.75	65.51

Peer Learning

Results suggest that multi-author blogs were ideal tools for engaging in discussions and peer-to-peer learning. A vast majority of the student-teachers agreed that blog discussions helped them to share their knowledge and experience with their peers (63.7%) and enhance their learning experience (76.8%). With regard to the questionnaire item about the importance of their peer comments on blog postings over 47% responded positively but some were not sure (24%). Most student-teachers agreed when asked if the blog discussions helped them understand the suggestions and comments of their peers (61.7%). They also responded positively to statements that their peers and lecturer were receptive to their views and ideas (65.1%) and that multi-author blogging was useful and helped them to learn (78.2%). Overall, the responses indicate that student-teachers perceived multi-author blogging to be a fruitful learning experience.

Building a Community of Practice

For the student-teachers, multi-author blogging supported and self-sustaining cultivated communities of practice. Most respondents (55%) used multi-author blogs frequently, as the student-teachers (50.5%) wanted to connect with other students and become important members of the classroom community (64%). Interaction is key in communities of practice as members interact and learn together. This was evident in the responses of the student-teachers who asserted that there was more interaction (56.7%) and the quality of the communication was better than in traditional classroom settings (56.7%), and therefore motivated to engage in discussions and learn more on topics of interest (68%).

Collaborative Learning Tool

Multi-author blogs were very useful for learning as it supported dialogue between student-teachers, provided a space for collaboration. The student-teachers' responses indicate that the blogs helped them to build knowledge collectively or through collaboration (54.9%) in better ways than face-to-face learning (68.4%) as they were able to share and exchange information with other student-teachers (67.4%).   A majority of the student-teachers agreed that the use of multi-author blogs enabled them to develop problem solving skills (60.4%) and knowledge (64.6%). While the blogging seemed to have fostered teamwork and collaboration and were satisfied with the learning experience (65.5%), many disagreed (63%) that collaborative learning was time consuming.

It is noteworthy that there were significant neutral responses to several items belonging to the three categories, for example statements 3, 8, and 15-18. These responses are valuable in that they translate to the fact that multi-author blogging did not have a significant influence on some of the student-teachers to lead them to have a positive or a negative opinion on the questionnaire items.

The responses to the three key categories reveal that the multi-author blogs had increased their engagement and motivation and enhanced their learning experience. It had had helped develop teamwork. Finally, the results also revealed that the student-teachers were able to form communities with the primary goal of engaging in group discussions. To sum up, the use of multi- author blogs seemed to have produced experiential learning opportunities as the student-teachers were able to learn from experience.

Qualitative data

The qualitative data obtained from the open-ended question in the questionnaire and the focus groups addressed students' perceptions of their multi-author blogging experiences. In response to the open-ended question in the questionnaire 'What are the advantages and disadvantages of using blogging for learning purpose?', the student-teachers' responses suggest that the benefits far outweigh the drawbacks. The open-ended data relating to student-teachers' opinions on multi-author blogs revealed themes which suggest that blogging was an interesting, positive, important, and useful resource in the educational context (see Table 8).

The focus group sessions lasted approximately 75 minutes and addressed the third research question: *In what ways were multi-author blogging helpful or challenging to the student-teachers?*

Sample questions included:
Did the blogs help you in your understanding of your subject? Please elaborate.
How has your experience of using blogs shaped your beliefs?
Audio recordings from the focus groups were transcribed and analysed thematically using the procedures advocated by Braun and Clarke (2006): familiarizing with data by searching important or interesting patterns in the data, coding, identifying, reviewing and naming themes, and finally producing the report. The data were coded and the themes that emerged were discussed with other members of the research team. Finally, categories

were developed. Overall, the thematic analysis resulted in 5 categories and 9 overarching themes (see Table 8). In order to compare and contrast the categories/themes generated from the quantitative and qualitative data, the results are presented under the five categorical headings.

Table 8: Connecting Codes and Themes to Categories

Categories derived from Questionnaires/Focus Groups	Themes generated from open-ended question in Questionnaire	Themes generated from Focus Groups
Peer Learning	Allows understanding different views	Improves learner experience
Building a Community of Practice	Help others/Foster cooperation	Sense of community
Collaborative Learning Tool	Enhances collaborative learning	Facilitates collaboration
	Foster social relationships	Provides social impetus
	Tool for interaction	
Affordances	Learning anywhere and any time	Enhances creativity
		Avenue for feedback and self-improvement
	Freedom of opinion	Freedom to vent opinions
		Tool for reflection
Constraints	Lack of feedback/trivial discussion/misinformation	Quality concerns
		Self-conscious blogging
		Time imposition

4.1.6. Triangulation

The qualitative and quantitative data were triangulated, and this process of simultaneous qualitative and quantitative dataset examination enabled a deeper level of analysis and interpretation than would not have been possible with the use of one method alone. We have treated the two datasets as complementary, rather than attempt to integrate them. The quantitative and qualitative data verified the findings of each method.

With regard to student-teachers' perceptions about multi-author blogs, the questionnaire results did reflect the findings from the qualitative phase (responses to open-ended questions in questionnaire and focus groups). However, we wish to acknowledge that there was a high percentage of neutral responses to six statements (for example statements 3, 8, and 15-18). The neutral responses (identified earlier in questionnaire results) show that the student-teachers were circumspect about multi-author blogging. The 'not sure' option gave the respondents the opportunity to express their opinion without having to voice extreme opinions. Nevertheless, this study has attempted to provide a better understanding of the respondents' perceptions

Peer Learning

The results of the questionnaire had demonstrated that the student-teachers engaged in blog discussions, shared their knowledge and experience with their peers, which helped them understand new concepts related to the course. Their responses to the open-ended question in questionnaire suggest that the collaboration with diverse individuals or peers provided new points of view. The results of the focus group corroborate the quantitative findings as the student-teachers reported during the interview sessions that multi-author blogs improved learner experience. One student-teacher clearly articulated her own beliefs about multi-author blogs by saying that:

> "*the forum helped enhance my confidence as well as that of my classmates ....to become better readers and writers and provided us with opportunities to take more control of our learning*" (FG 2).

Those with similar positive attitude also reported that blogging provided students with "suggestions and support from their peers" (FG 3).

Building a Community of Practice

The questionnaire findings indicated that multi-author blogging, had enhanced the quality of the communication, allowed the respondents to find connections among their personal, professional, and academic experiences, and created new methods of interaction and new means for building a community of practice. The student-teachers' responses to the open-ended question in the questionnaire also showed that they were able to help other students as the virtual space fostered cooperation. The focus groups uncovered a far richer sense of community views. For instance, one student-teacher responded that:

> "*Multi-author blogging allowed us to practice our communication skills, build empathy or recognise and identify others'* feelings *and connect with fellow students in the community*." (FG 1).

Another student-teacher also reported a strong sense of community:

> "*Classroom community can be developed through blogging. I mean by establishing a class identity*." (FG 1)

Collaborative Learning Tool

The quantitative data showed evidence that multi-author blogs fostered teamwork, supported dialogue, allowed information exchange, and build knowledge collectively. Data analysis of the qualitative section of the questionnaire also revealed that the virtual space enhanced collaborative learning and fostered peer interactions through social relationships. The focus group data corroborated these results and indicated that the blogging provided social impetus. When asked whether multi-author blogs allowed any particular type pf learning, the students tended to emphasize the importance of collaborating with peers:

> "*The group learning approach….I love it. It is enjoyable, effective, educational, and interesting*." (FG 2)

Some of them showed a high level of motivation to learn through collaboration, with one student-teacher reporting that:

> "*I like to share thoughts, so I can better understand new concepts and ideas*." (FG 3)

Another student-teacher claimed that:

> "*My lecturer was monitoring collaboration…and provided feedback on our entries posted in the blogs, as well as the timeliness of blog entries. It motivated me*." (FG 2)

When asked if multi-author blogs changed the way you learn several students acknowledged the social motives for blogging:

> "*It has changed the way we communicate and learn … sharing information and learn from others' experiences……that is the way we learn from each other*." (FG 2)

> "*I see blogging as a terrific starting point for developing social skills*." (FG 1)

This social dimension had created an important driving force for blogging. The student-teachers were drawn to blogging out of the desire to help fellow colleagues, to connect and to exchange ideas.

Affordances

Affordances refer to "the strengths" of advantages of multi-author blogs "with respect to the possibilities they offer the people that might use them" (Gaver, 1991, p.79). The qualitative data gleaned from the questionnaires showed that the use of multi-author blogs- allowed anywhere, anytime learning, as well as freedom of opinion. For instance, the student-teachers were well prepared for the class, as they had acquired knowledge of the course/concepts beforehand and it was possible for them to share ideas and discuss them at any time and from any place.

The student-teachers reported during the focus groups that the multi-author blogging model was a tool for reflection and had several advantages, for instance enhanced creativity, provided an avenue for feedback and self-improvement, and the freedom to vent one's feelings or opinions. According to one participant:

> "*Blogging by different authors increases creativity….allows us to be creative… I can create my own content as well as edit content.*" (FG 2)

What the student was conveying was that there was an element of creativity and opportunity to explore different topics. Another student from the same group added:

> "*Blogging lets you express yourself…it allows us to expand our expression of ideas more than we used to in the classrooms….I mean with a great deal of confidence.*" (FG 2).

In other words, it provided an avenue for feedback and self-improvement.

> "*In the traditional classroom, students who are shy do not come forward with suggestions or ideas. The blogs offer space for advice, criticism and practical ways to improve yourself through commenting.*" (FG 3)

These responses indicate that peer feedback mediated through blogs is immediately available to the students, and they were able to access it anytime and anywhere. The blog activity also provided a useful way in which to vent opinions or feelings and the chance to have their voices heard.

> *"It is a release, you know…one can get off your feelings and even celebrate them."* (FG 1)

A theme that emerged in most of the responses from the student groups was that multi-author blogs were tools for reflection.

> "*I am able to process information and reflect instead of just consuming information*". (FG 3)

> "*Blogging is a great way to reflect and learn. I use previous discussions and assignments related to this course as the basis for reflection.*" (FG 1)

Constraints
In comparison, some student-teachers did not see the social benefits of the blog activity. Constraints, here, refer to the disadvantages or perceived limitations of multi-author blogs. Some of the perceived limitations to the multi-author blogging model, expressed in writing in the qualitative phase of the questionnaire were lack of adequate feedback, trivial discussion and misinformation. The themes that emerged from the focus groups were quality concerns, self-conscious blogging, and time imposition. One of the responses which provoked intense debate include:
> "*I see no point in* inconsequential discussions…I prefer face-to-face discussions in lecturer-led classrooms." (FG 2)

Another problem that the students encountered was related to concerns about the quality of the discussions and feedback. Some student teachers questioned the quality of advice from other students, indicating that the presence of a lecturer or ideas from textbooks or online sources would be more valid.
> *"Some of the comments and feedback lacked value.*" (FG 1)

> *"I prefer seeking advice from lecturers or browsing online journals."* (FG 2)

> *"I prefer textbooks for help."* (FG 2)

One student-teacher could not overcome self-consciousness while blogging.

> "*I am self-conscious about blogging because I am learning in a public forum. It is embarrassing to reveal through my comments or ideas what I do not know about the subject*." (FG 2)

This response implies discomfort or unease in discussing issues in a public forum and difficulty in providing advice to students they did not know. Students also complained about the time needed to complete the blog postings, saying that it was "inconvenient" and:

"*I would rather learn about it in the classroom.*" (FG 3)

5. Key Findings and Discussion

Our investigation of the perceptions of student-teachers towards multi-author academic blogs as an effective learning tool revealed significant findings which are presented below vis-à-vis the three research questions.

Research question 1: Is there a significant difference in student-teachers' learning outcomes when a multi-author blogging model (experimental) is used, as compared to a traditional instructional approach (control)?

The multi-author blogs were used as an assessment task for the experimental group, but the *t*-tests found no significant differences in the mean scores of both groups (EG and CG) in the first exam. However, there was a statistical difference between the EG and CG in the second and final exams (see Table 5) as the mean scores of the experimental group was significantly higher than the control group.

Research question 2: How do student-teachers perceive the use of the multi-author blogging model in terms of its usefulness for learning?

The descriptive data revealed that the student-teachers perceived the multi-author blogging model significantly improved peer learning, helped in building communities of practice, and enhanced collaborative work between multiple authors. The qualitative themes generated from open-ended question in questionnaire suggest that the blogs allowed understanding different point of views, helped foster peer interaction and increased cooperation in communities of practice, nurtured collaboration and resource-sharing, and enhanced the likelihood of positive peer social interaction among student-teachers. The benefits of blogging included anywhere-anytime learning and the freedom to voice opinion. With regard to constraints the findings demonstrated that there was a lack of prompt feedback and that the discussions were insignificant.

Research question 3: In what ways were multi-author blogging helpful or challenging to the student-teachers?

Qualitative data from the focus groups corroborates all the questionnaire findings and provided answers to Research Question 3, for instance that multi-author blogs improved learner experience, created an avenue for feedback and self-improvement, facilitated collaboration, provided additional impetus for pursuing social relationships with other students, and the opportunity to vent opinions or feelings.

The qualitative study revealed a number of dimensions not measured by the quantitative study, such as, the perception that blogs enhance creativity. Most importantly, the focus group findings demonstrated that student-teachers considered the blog as a vehicle for facilitating reflection as part of collaborative learning. Other significant findings, which were categorized as constraints or limitations, include concerns associated with the quality of blog discussions and feedback, self-conscious blogging and time imposition.

Discussion
Our findings suggest that student-teachers were able to share their knowledge and experience with their peers in blog-supported environments. This is consistent with results of previous studies, for example Fowler and Thomas (2015), Chang and Chang (2014) and Killeavy and Moloney (2010), that blogs have the potential to enhance students' learning experience by supporting peer learning. The theme 'freedom to vent opinions' is aligned with the findings of Ali et al., (2013) and Foroutan et al., (2013) that blogs allow learners to freely express their ideas and thoughts as well as to interact with peers and lecturers.

In terms of this study, multi-author blogging allowed student-teachers to engage in learning through semiotic interaction with more knowledgeable others in communities of practice. Aligned with previous research, a sense of belonging a group (or identifying with a community), and perceived collaborative learning were critical in enhancing learning through participation, engagement, and interaction (van Mawson, 2017; Wyk, 2013; Krishnaiyer, Mushahar & Ahmed, 2012; Cuhadar & Kuzu, 2010; Halic et al., 2010; Yang, 2009).

Most student-teachers perceived their blogging experience as positive, which is in line with previous research. For instance, Kilic and Gokdaş (2014) as well as Top (2012) have addressed in their study that blogging students are keen on sharing information, exchanging ideas and collaborating with peers. Student-teachers in this study felt they were more connected to other students which is congruent with previous findings, for example, Ette and Stoker (2015) and Stoszkowski and Collins (2014), who found that learners who blog in groups not only share their opinions and learning experiences, but also practice what was taught in class (experiential), and collectively construct knowledge.

The student-teachers in our study perceived that the social values of academic multi-author blogging enabled to not only keep others updated but also seek help. This social nature of blogging is claimed to support communication, provide opportunities for dialogue and collaboration, and promote good social relationships amongst student communities (van Wyk, 2013).

Our findings echo several previous studies (for example. Jackling et al., 2015; Ette & Stoker, 2015; Park et al. 2011) that students can have a better understanding of their learning through blogging if they are encouraged to formally reflect on that learning. Another finding was that the student-teachers in our study were empowered by the positive feedback they received. This finding might be best explained by Ette and Stoker (2015) and Zhang et al., (2014) who had reported similar results.

Although most students had positive dispositions towards the use of micro-author blogs as a tool for learning, they also claimed that there were issues which were previously reported by other researchers, for instance, lack of quality feedback (Deng & Yuen, 2011; McLoughlin & Lee, 2010), and time constraints to edit content (Mawson, 2017). Although it is argued that different authors can provide quality content to readers (Mawson, 2017; Ali et al. 2013) this was not what some student-teachers experienced.

Overall, the results indicate that multi-author blogging did create a virtual environment for interaction, and collaborative learning. It also created an experiential learning environment in which student-teachers could reflect upon previous experiences and develop new learning. The student-teachers actively experienced learning (concrete experience), reflected on their experience (reflective observation), used logic and ideas including that of their peers (abstract conceptualization) and carried out their tasks by adapting to the circumstances (active experimentation).

6. Conclusions

Our findings suggest that blogs are a potentially useful tool for student-teachers to reflect on their experiences. The multi-author blogs, which helped the student-teachers to engage with a large community of learners, facilitated meaningful discussions. It allowed the student-teachers to draw meaning from these experiences and incorporate that meaning into new learning conceptualization

The results demonstrated a significant alignment with Kolb's Experiential Learning Theory. Based on the results of this study, the use of multi-author blogs appears to provide a solid theoretical underpinning for teaching and learning

One of the limitations of this study is the use of a purposive sample for administering the questionnaire. Since the sampling might be biased, the results cannot be generalised to the entire population. Therefore, the findings were not interpreted beyond the sampled population. While the study was quasi-experimental and involved two cohorts of students, the fieldwork took place in one educational institution and a specific course.

This paper offers useful insights and suggestions for lecturers and students interested in either using or researching on blogging as a means to developing their research skills and understanding. Although the results of this study are encouraging, we would like to caution university instructors to not dismiss traditional instructive approaches entirely. We therefore feel that more empirical research is required that would not only demonstrate the pedagogical value of implementing multi-author blogs but also expose the dilemmas and contradictions of embracing new technologies within the classroom. It is expected that the findings of this study may go some way towards doing just this.

This study acknowledges that there have been numerous scholarly articles on multi-author blogs and blogging published in the West. However, there is a scarcity of empirical research on multi-author blogs and its incorporation amongst pre-service teachers in Kuwait, especially in the area of educational technology. The results of this study are therefore presented to help fill these gaps.

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