

ICT Integration in Teaching and Learning: Samoan Pre Service Teacher's Perspective

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Abstract

In this age of information technology, the idea of using ICT as a teaching tool is very much at the forefront of all education discussions. Studies found that students are now more frequently engaged in the meaningful use of computers (Castro Sánchez and Alemán 2011) thus they have developed more knowledge and understanding in the use of technology in their areas of learning (Chai, Koh and Tsai 2010). It is therefore crucial for teachers to change their ways of teaching from a more traditional pedagogy to integrating ICT into their teaching method so they will be able to cater for learning needs of the 21st century learners. The purpose of this qualitative study was to examine perceptions of pre service teachers concerning the use of ICT as a pedagogical tool in the teaching and learning process. Further to explore this cohorts' views on adequacy of computer courses offered at university in preparing them for the teaching profession. This qualitative study utilized an open ended questionnaire with 40 Pre service teachers (24 Secondary and 16 Primary) who were in their 3rd year in their study within the training institution. Findings indicated that computer courses offered for pre service teachers were sufficient only to fulfill students' academic requirements and lesson preparation during teaching practice. Findings also indicated that while ICT has great pedagogical value, it is perceived as a teaching resource/tool in the hand of the teacher which reinforces the notion of teacher centered (teacher imparts knowledge and learners receive) as opposed to learned centered approach where learners themselves use ICT to construct their own learning. The study although undertaken in Samoa has greater relevance to other contexts in the area of ICT and education

Keywords: Teacher Education, Information and Communication Technology (ICT), Integration, Pedagogy

Introduction

In this day and age the importance of technology in our daily lives cannot be overemphasized given that technology seems to modernize every fragment of society. In the discipline of education the value of technology is overly crucial. This is because most students in this era of technology explosion, seem more disposed to learning from technology than from a teacher lecture or chalk and talk teaching approach. Based on these observations one argues that the 'chalk and talk' and lecture style mode of delivery- a very traditional type of teaching technique that was/is still prevalent in the classroom although seem appropriate in the past may not be relevant today given the rise of information and communication technology. Therefore there is a great need for a change in teachers pedagogical skills i.e., teachers need to be skilled and familiar with the use of modern teaching approaches and pedagogies using IT to serve the needs of the modern day classroom. It is crucial that teachers have the requisite IT skills to effectively carry out classroom instructions. (Hughes 2013) refers to this integration of technology in teaching and learning (IITL) as the use by teachers and/ or students of digital ICTs that support the constructivist teaching and learning process. The question can be asked; are Samoan teachers well prepared in this respect? This study was driven by the concern that the computer course(s)

offered by training institution for pre service teachers in the Bachelor of Education (BEd) program may not equip preservice teachers to address the needs of the 21st century learners in the classroom.

Context of the Study

At the National University of Samoa (NUS) with respect to computer courses offered for pre service teachers in 2015, apart from secondary pre service teachers who took computer courses either as a major, a minor or as an elective, the majority of students (primary and secondary) enrolled in the bachelor of education program took only one computer course (HCS081 Foundation Computer studies) throughout their training. As the title of the course indicated, the course was offered at the foundation program and involves very basic computer skills. The aim for the course was to “introduce students to the components and functions of microcomputers, the uses of computers in society as well as providing an introduction to contemporary applications and programming. Topics include, introduction to computers, to operating systems (Microsoft Windows), to word processing (MS Word), spreadsheets (MS Excel), database (MS Access) and programming (Java)” (National University of Samoa Calendar 2015: 283).

Many conversations at the faculty meetings seem to suggest that computer courses offered for pre service teachers may not be sufficient to equip these individuals to teach in the classroom. It is a serious concern if teachers are not well equipped with the appropriate instructional methods to address the needs of learners in the present day and age. As teacher educators, we were driven by the desire to examine the views of pre service teachers about the following: sufficiency of computer courses offered by the university to prepare new teachers for the teaching profession; value of computer skills as a pedagogical tool for teachers as well as challenges encountered by participants during their computer course training.

This research is of interest to stakeholders who have an interest in teacher preparation programs and in student education both at the national and international level. This includes policy makers with the ministry of education and at the teacher training institution as well as trainers who are involved in the preparation of teachers.

Literature Review

Information and Communication Technology (ICT) are widely used in today’s education field which include computers, the Internet, and electronic delivery systems such as radios, televisions, and projectors among others. Research has indicated that ICT assists in transforming a teaching environment into a learner-centered one (Castro Sánchez and Alemán 2011). This is because in an ICT learning context, learners are more likely to be actively involved in the learning processes (Lu et al. 2010) and will be given the authority by the teacher to be involved in decision making, and planning. As such, ICT provides both teacher and learners with more educational possibilities. (Coleman et al. 2016) contend that the appropriate use of ICT in teaching change the nature of the teaching and learning atmosphere from teacher-focused to learner-focused. The authors

further add that the change of focus from teaching to learning results in a more engaging and creative environment hence shifting the role of the teacher from a communicator of knowledge to that of a facilitator. (Keengwe et al. 2008) stress that the integration of multi-media technologies such as graphics, video, audio, animation etc. into the teaching and learning environment can enhance classroom instructions while at the same time address the varied learning needs of learners.

It appears that ICT integration into the teaching and learning environment can achieve the best quality pedagogy however while the idea seems attractive, it comes with a number of challenges. For example research have shown that there are interrelated factors that determine the success or failure of teacher use of ICT in education. These factors can be connected to the teacher personal characteristics (beliefs, values and attitudes) as well to the external environment. With regards to teacher related factor, research has shown that teachers' attitudes and beliefs are essential determinants and predictors for integration of ICT in classroom instructions (Eickelmann and Vennemann 2017). Attitude can be influenced by knowledge, skills and experience with ICT. Studies have shown that not all teachers are technology savvy, for a number of teachers have inadequate skills and expertise in using computer thus can inhibit ICT usage in the teaching and learning (Becker 2000). Limited skills can affect one's motivation and as noted by (Pamuk and Peker 2009) teachers who suffer from computer anxiety may not be motivated to use educational technology effectively. Limited skills can also be connected to experience and one may also argue about the importance of an individual being experienced in a phenomenon for it impacts on their motivation as well as attitude towards a phenomenon. For example, (Beckers and Schmidt 2003) in connecting experience and attitude towards computer skills highlighted that experience influences one's positive attitude towards computers. Papasterigiou 2010 (cited in Player-Koro 2012) argued that familiarity with technology use can result in people viewing ICT use in a more positive light- this in turn will lead to "a greater feeling of self-efficacy." It is evident that teacher characteristics is one essential factor that determines success or not of ICT integration in education.

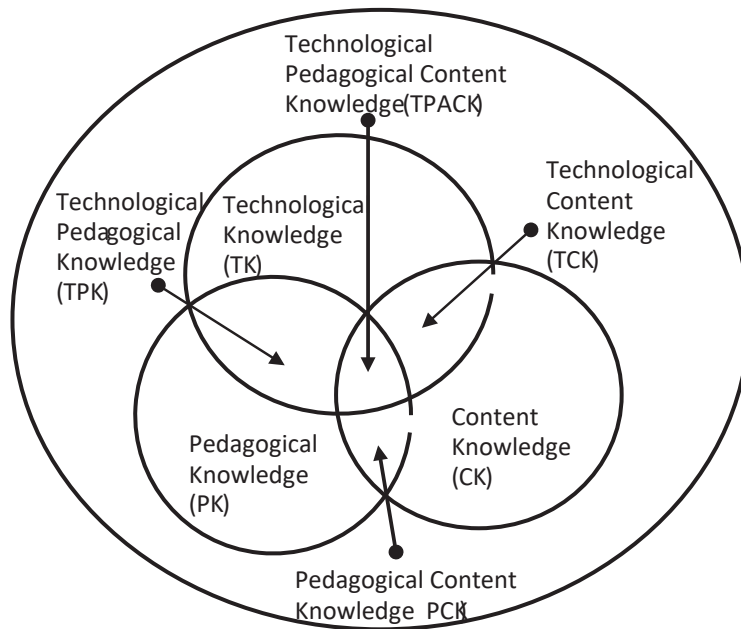
In addition to teacher characteristics, factors pertain to the environment can also affect ICT integration. These factors can include infrastructure as well as personnel such as trainers and facilitators of ICT programs. In their review of the literature, (Aslan and Zhu 2015) argued that one of the important considerations for effective integration of ICT into education concerns with infrastructure. They noted that availability and quality of infrastructure affects the integration of ICT in education. (Akbulut et al. 2011) supported the importance of having accessible solid infrastructure in addition to employing technical support staff to support individuals in their use of ICT. Implied herein is the importance of having available infrastructure that is accessible to all users in addition to personnel to support ICT usage.

Having individuals with expertise in ICT skills to offer computer training for teachers is essential as stressed by (Aslan and Zhu 2015). The authors argued that one of the determining factors for successful integration of ICT into the teachers' practice mainly depends on what teachers learn from their teaching program. Implied herein is the important role the trainer and training

institution play in the development of the teacher. Teachers need to develop the confidence to teach and make a difference in the lives of other individuals, they need to have good knowledge and understanding of ICT and how it can be integrated into their classroom instructions. Effective training with appropriate training programs can help develop confident teachers of today therefore the value of the trainers role in preparing teachers cannot be overemphasized. (Hafsah 2017) maintained that teacher training institution needs to prepare teachers to utilize technologies in a systematic and analytical manner. He emphasized the importance of having creative teachers who can create own resources and techniques and this is where ICT skills come in. Good computer skills can develop creativity not only within the teachers but learners themselves. The current study examines preservice teachers' experiences concerning computer courses they took at the training institution and the adequacy of the courses in preparing them for the teaching profession. Furthermore, to investigate this cohorts' views regarding integration of ICT in education. In order to understand the concept of ICT integration into education as used in this research, the Technological Pedagogical Content Knowledge (TPACK) framework by Mishra and Koehler (2006) in Figure 1 below was adopted.

Technological Pedagogical Content Knowledge Framework (TPACK)

Figure 1: The TPACK framework



Adopted from: Mishra & Koehler (2006), page 1025, Figure 4.

The TPACK framework (Figure 1), suggests that for effective integration of ICT into teaching and learning (IITL) three spheres of knowledge; content knowledge (CK), pedagogical knowledge (PK) and technological knowledge (TK) need to be taken into consideration by the teacher. According to (Mishra and Kohler 2006), Content Knowledge (CK) refers to knowledge about the actual subject matter that is to be learned or taught. The authors contend that in order for the teacher

to integrate technology into teaching, it is crucial for the teacher to have a good understanding of the subject that s/he teaches. This includes knowledge of central facts, concepts, theories, and procedures. Pedagogical knowledge (PK) on the other hand refers to an in-depth knowledge about techniques for facilitating the teaching and learning environments which encompasses values and aims, classroom management, lesson planning, and student evaluation. (Mishra and Kohler 2006) also note that a teacher with a profound PK is more likely to incorporate technology as part of his or her classroom instructions, while at the same time take into consideration the nature of learners and their learning context. Technological knowledge (TK) is concerned with the knowledge about standard technologies, for example books, chalkboard- similarly the knowledge of more advanced technologies such as the Internet and digital video and how these technologies are operated. Mishra and Kohler submit that the teacher with TK has good knowledge of the operating system and computer hardware. Furthermore, the teacher is capable of using standard sets of software tools such as word processors, spreadsheets, browsers, and e-mail, in addition to installing and removal of programs, devices as well as creating and archiving documents.

Mishra and Kohler noted that the interaction of these three knowledge domains; CK, PK and TK yield three paired knowledge spheres namely pedagogical content knowledge (PCK), technological content knowledge (TCK) and technological pedagogical knowledge (TPK). The authors refer to PCK as the pedagogical knowledge that is appropriate for content instruction or the teaching approach that is suitable for teaching a specific content-it includes knowing how to organize and arrange the content for effective instruction. Furthermore, the authors view TCK as the knowledge concerning the shared connection between technology and content. They emphasize the importance of the teacher having both the knowledge of the subject matter plus the knowledge of how the subject matter can be realized through the technological application. With regards to TPK, the authors recognize this as the knowledge of various technological apparatuses or devices that can be applied in the teaching and learning situation. It also involves the knowledge of the changes that occur within the teaching and learning process by means of using a specific technology. TPACK (Figure 4) therefore involves the interconnection of the three bodies of knowledge (CK, PK & TK). The authors submit that for teachers to be effective in teaching using technology (integration ICT in education) the development of TPACK is essential.

Several studies have been conducted on pre service teacher's perceptions regarding integration of ICT in education however none has been undertaken within the Samoan context. This study was the first undertaken in Samoa to gauge attitude and perceptions of this cohort regarding the ICT phenomenon. The purpose of this qualitative study was three fold:

To find out participants' views of ICT courses offered for teachers at the National University of Samoa (NUS) and whether these prepare them for the teaching profession; to examine their views about the integration of ICT into education as well as their views about ICT as a pedagogical tool.

The main research questions which guided the present study were

1. How do preservice teachers perceive courses offered for preservice teachers at the training institution?
2. What are pre service teachers' perceptions concerning integration of ICT courses in teacher education?
3. What do pre service teachers think about the practical value of ICT as a pedagogical tool?
4. What are challenges that pre service teachers experience in integrating the ICT course into their studies and or teaching practice?

Methodology

A qualitative approach was utilized in this study to investigate pre service teachers' perceptions of ICT integration in education in the Samoan context. A total of 40 pre service teachers (primary and secondary) who were in their 3rd year of teacher training in 2015 were surveyed using an open ended questionnaire. Purposive and criterion sampling was used to select participants for this study. Criterion sampling aspect was deemed appropriate given the researchers were interested in selecting the participants based on the following criteria: (i) students should be in their third year of teacher training, (ii) the participants should have already taken at least one computer course at the National University as part of their training.

Table 1: Characteristic of participants

	Males	Females	N
Secondary	6	18	24
Primary	3	13	16
N	9	31	40

Table 2: Number of participants relative to computer courses undertaken

	Major	Minor	Elective	Core (HCS081)	N
Secondary	3	6	4	11	24
Primary	-	-	5	11	16

Table 2 presents students from both secondary and primary level according to type of computer courses taken during their studies.

Procedure

A questionnaire with open ended questions was sent to 50 third year pre-service teachers (both primary and secondary) with a return rate of 40 (80%). The aim was to examine their perceptions regarding the integration of ICT into education or teaching and learning process. Informed

consent was sought from all the participants to participate in the study. The questions were related to: value and sufficiency of ICT courses offered at NUS for teachers; value of ICT as a pedagogical tool, integration of ICT into the teaching and learning process and challenges they encounter with using ICT at NUS.

Data Analysis

The qualitative data was analyzed using a thematic open coding procedure noted by (Miles and Huberman 1984). The questionnaires were collected, transcribed and each questionnaire was read through several times and coded and categorized by the researchers. The unit of analysis was based on units of meaning and each case was assigned a case number. Open coding was used to ascertain the themes and axial coding was applied to connect the sub-themes under the related themes. Three significant themes emerged from open coding namely (1) Significance of Computer courses offered at the training institution 2) ICT integration in education, (3) ICT as a pedagogical tool (4) Challenges with ICT at the training institution

Findings

Table 3: Emerging themes and subthemes

Themes	Sub themes	Categories
Significance of computer courses offered at training	<ul style="list-style-type: none"> • Sufficiency of • Usefulness /value of ICT courses 	<ul style="list-style-type: none"> • Academic studies • Lesson presentations • Research
ICT integration in education	<ul style="list-style-type: none"> • ICT in relation to globalisation • ICT economic perspective 	
Pedagogical value of ICT	<ul style="list-style-type: none"> • ICT as a pedagogical tool 	
	<ul style="list-style-type: none"> • ICT and teacher professional development 	<ul style="list-style-type: none"> • ICT: a teaching tool • ICT and research • ICT teacher creativity/critical thinking • ICT and Teacher change • ICT and Teacher Efficacy
Challenges related to ICT training	<ul style="list-style-type: none"> • Training institution related factors • Student related issues 	<ul style="list-style-type: none"> • Instructor related issues • Limited computer knowledge/skills

The study aimed to explore participants' views concerning their experiences using ICT in their teacher training, as well as their views of integrating ICT into the teaching and learning process. Findings are presented according to emerging themes related to: (1) Significance of Computer courses offered at the training institution 2) ICT integration in education, (3) ICT as a pedagogical tool (4) Challenges with ICT at the training institution.

Significance of Computer Courses Offered at the Training Institution

The theme related to significance computer course offered by the training institution for teachers came up with subthemes related to sufficiency and usefulness of computer courses offered to teachers. More than half [N=35 (87.5%)] of participants indicated that computer courses they took during their course of study at the pre service level equipped them with the basic computer knowledge and skills. This implied sufficiency of computer courses offered by the training institution to support teachers at the foundation level.

ICT Course sufficiency

According to participants, the basic computer applications such as Microsoft word they learned from these courses are sufficient for their academic studies and to prepare their lessons during teaching practice. They were also able to use PowerPoint to vary the instructional material during their practical lessons.

Yes it equips me with the knowledge to use power point which is very important as the teacher needs to change the learning to capture the attention of students... and it help me search for information for whatever is happening globally (p.6.)

As noted earlier, there was an indication that while computer courses offered by the training institution for teachers are sufficient for participants' academic studies however do not place them in a position to guide students into becoming self-regulated learners as noted by P.4 below.

I think it is enough for my assignments at NUS but not enough in the classroom to deepen children's knowledge (p.4).

(Mishra and Koehler 2006) emphasised the importance of teachers being well versed with ICT skills so they will be able to teach the subject content otherwise the teacher will have issues using ICT in their practice.

Value of ICT courses

The question whether they find ICT courses offered for preservice teachers helpful found 33 (82.5%) participants in support of the value of courses they took. The participants deemed ICT course as a personal gain for the individual for a number of reasons. For example, use of power point to present a lesson help students get a better understanding of what is being delivered.

Yes ICT is very helpful because using equipment like computer or laptop also using or data projector to do presentation or the lesson that the teachers teach, it is easy to understand when using the Microsoft PowerPoint (p.34)

Participants also noted the value of computer courses in improving their skills as teachers' as noted in this comment:

It is helpful in that it helps me gain more knowledge to expand my teaching methods for teaching children in the classroom. It helps a lot in teaching lessons in classrooms because we only print out handout and give to students than writing things on the bed. (p.2)

Some participants indicated that the computer courses can help enhance the teachers' teaching approaches allowing them to shift from the more traditional to a more modern manner of delivery

Yes it is very helpful for teachers because it helps a lot for providing handouts to teach the students and it can improve the technology for teachers because some teachers they teach only from the blackboard but they do not use computers to type their school work etc.(p.33).

ICT Integration

In terms of ICT integration more than half of participants 33 (82%) indicated the importance of integrating ICT into the teaching and learning process. Two subthemes emerged from this theme; ICT in relation to globalization as well as ICT for its economic value.

ICT in relation to globalisation

One of the importance of ICT integration in education was connected to the notion of globalisation. Participants' perceived utilisation of ICT from a globalised paradigm where they indicated that use ICT by Samoan teachers puts Samoan teachers on par with the rest of the world concerning pedagogy usage. This notion of ICT as part of globalisation indicate that participants are well supportive of modernisation in terms of ideas and pedagogical skills plus the importance of being on par with the current global changes in education:

Yes it is helpful, as you can see the world is moving forward ...is computerised. We need computer to type our assessments and to access to other things in the internet (p.9).

Economical value of ICT

What is interesting to note is the manner in which a number of participants viewed ICT utilisation from an economic perspective. For instance, several participants opined that it is more economic to use internet when searching information for their academic studies:

Yes it is very helpful in many ways ...besides computers help to find information and it is free on internet (p.20).

One can very well understand the importance of associating ICT to economic value especially given the socio economic background of the participants. The majority of participants hail from an average socio economic background. Thus the importance of attaining free resources is understandable.

Pedagogical Value of ICT

The question in relation to ICT as a pedagogical tool for teachers was perceived positively by a high number of participants 33 (82.5%). Two themes ICT as a teaching tool and ICT with respect to teacher growth emerged. A number of categories were also developed under this theme and subtheme as will be highlighted.

ICT as a Teaching Tool

Participants seem to view ICT as a resource to enhance creativity on the part of the teacher. In such manner, ICT is viewed as a tool in the hand of the teachers to pass knowledge on to students. This is as opposed to ICT in the hand of the student to construct own learning and the teacher as a guide.

Yes. ICT can be used as another teaching method to teaching subjects within schools. It can be a new technique as opposed to the traditional way where paper and cardboards are used by students to write their work [P40]

For some participants, ICT is connected to resource development for example, these participants indicated that teachers need to develop ICT skills so they will be able develop teaching resources:

Teachers really need ICT because it helps teachers develop their notes on printer and photocopies and no more writing on brown paper and blackboard p.34.

ICT and Teacher Growth

Four categories-creativity and critical thinking, ICT and teacher change, ICT and teacher efficacy, emerged as related to this subtheme which will be discussed. The importance of having Computer knowledge to aid integration of ICT in teaching and learning was highlighted by (Mishra and Koehler 2006). This aids teachers in their professional development. Generally, mostly all participants acknowledged the important value of ICT to enhance teachers' professional skills and knowledge as noted in these statements:

Yes because it really helps to improve teachers teaching techniques which they can apply in communicating and cooperating with the students. It can help encourage children in their learning (p.13)

Creativity and Critical Thinking

A number of participants perceived the importance of gaining ICT knowledge and skills in relation to developing teachers' creativity.

... Pedagogical works together with ICT because ICT involves your use your critical thinking in how to be creative in working and solving problems (p.6).

According to the literature (Lu et al. 2010) ICT can afford teachers and learners with more educational possibilities-this could allow room for teachers to be creative. In addition to ICT enhancing creativity, participants also associated ICT knowledge with the idea of critical thinking:

... Teachers need ICT to help with their lesson presentation in addition to creating something new inside the classroom. This is another way to develop their thinking in lesson demonstration (p.15).

ICT and Teacher Change

The value of computer courses was viewed from the notion of change. i.e., participants stressed the importance for teachers to adapt to new changes especially given numerous educational reforms that are introduced within the educational arena. Participants acknowledge the importance of being familiar with new ways to address the learning needs of students in the classroom:

Nowadays, children have access to ICT and teachers should adjust to these so that they can teach students in a way that they will learn (p.3).

This participant saw it as adapting to new ways of teaching. For example when asked about her views regarding integrating ICT into teaching and learning this participant pointed to the importance of adapting to new changes:

"It is crucial for teachers to adapt to new changes such as integrating ICT into their teaching" (p.26)

ICT and Teacher Efficacy

Integration of ICT into teaching was also perceived from the stand point of effectiveness. For instance participants saw ICT as an invaluable support for instructional activities in the classroom.

By using ICT we will use examples via pictures so that students can understand what our lesson is about every teacher should have many styles of teaching because it denotes an effective teacher. Using ICT when teaching is another method that can be very effective when teaching a lesson. (p.36).

These accounts seem to imply that the old style of classroom instructions such as chalk and talk are ineffective compared to when ICT is integrated into the teacher's instructional activities. While ICT was applauded in terms of effectiveness' sake it was also acknowledged in relation to efficiency

I think ICT course for teachers is so helpful. This is because computers is a useful technology that we are now using to gather and record information rather than using hard copies records. It is easy, fast reliable for researching and for gathering and storing information. (p.38).

Challenges with ICT Integration

Although participants were enthusiastic and positive about the value of integrating ICT into teaching, they also highlighted a number of challenges. Challenges that were identified were placed under two subthemes related to the *training institution* as well as to *students*.

Training institution

Infrastructure

Issues that pertained to the university include quality of infrastructure More than half participants pointed to inadequate computer labs available for students. This scarcity led to over crowdedness and thus affected learning. For example, participants mourned that many times they had to wait their turn to access a computer and if they were able to access a computer, they would find the computer in very poor condition. For example, the system would be very slow and it takes time for the student to log in.

Sometimes I have to wait half hour before I can get onto a computer and If I do it takes time to access (p13 , p23,)

What is worthy to note is that majority of students who enrolled into education programs do not own a computer and the only source of information for them is the university computers. Thus if the computer system is problematic it can greatly affect students' studies. In addition to the issue of computer availability is the internet access problem. According to the participants, the internet is mostly down which in turn impact on students own study schedule as they had to rush to other classes. In most cases by the time the computer was effectively activated it is time already time for students' the next class as this participants commented:

"... Most of the time we come need to use a computer, we find computers in the lib not working or the internet is so slow, it takes hours but we need time for other classes". (p18).

This dilemma is something that the training institution really need to address.

Student Related Issue

In addition to issues connected with the training institution, there are also issues that pertained to students which include limited computer knowledge as indicated here:

I did not take any computer courses. Am still trying to familiarise myself with strategies in need to do my assignments. (p.28)

Lack of computer knowledge can definitely affect one's confidence in using ICT as this participant stated:

I don't understand how to use some keys sometimes when finding information (p.19)

The same feeling of uncertainty was mentioned by other participants which can inhibit ICT integration into the teaching and learning situation. This participants in response to the question concerning challenges she encountered in ICT training answered:

Being scared and nervous being my first time [p5]

The literature (Mishra and Koehler 2006) noted that this lack of knowledge can affect one's confidence which in turn affect integration of ICT in the classroom

ICT Instructor Related Issue

Besides student related issues, some participants also raised concern about the pedagogical skills of the computer instructor. For example, some participants seemed to struggle with trying to understand the instructions provided by the tutor.

The system is not good. Most of the time the computer lecturers are strict in teaching this course. Lecturers should have enough computers skills and there should be enough computers. (p29)

Discussion

The current study aimed at exploring views of preservice teachers on how ICT courses offered at the training institution prepared them for the teaching profession. Furthermore, the study aimed to find out participants' views regarding the use of ICT as a pedagogical or instructional tool.

Findings indicated that courses offered for preservice teachers are sufficient and useful to perform their academic studies which include utilization of PowerPoint for lesson presentations, and internet to research information.

Findings also highlighted that ICT courses are important in a number of ways. For example, with regards to teachers' professional development, it was indicted that teachers need ICT courses in order to enhance their teaching (delivery) performance.

Integration of ICT in teaching and learning was also connected to work efficacy. For example, computers can help save time for student teachers as well as practitioners in developing and planning teaching and learning resources. In Samoa, availability of teaching resources has always been an issue in most classrooms (Tufue-Dolgoy 2012) where it is not uncommon to see an average number of 50 students to one teacher. One may therefore argue about the importance for teachers having a good grasp of computer knowledge and skills for this can lead to efficiency on the part of the teacher. With regards to ICT as a pedagogical tool it appears that the majority of participants view ICT as a 'resource' and not as a 'pedagogical tool'. Participants made reference to the importance of teachers having a good understanding of ICT so they will be able

to teach students. Making reference to teachers' ability to use power point and other computer application for their class presentation seem to suggest that participants view the use of ICT skills or computer skills for their own professional development i.e. so they will be able to deliver effectively in a creative manner. When use of ICT is viewed as a teaching resource or a tool in the hand of the teacher for instructions deliverance, it implies the old traditional teacher centered style of teaching approach. Over the years, the prevailing traditional 'chalk and talk' type of classroom instruction was more teacher centered type with the teacher being in control of classroom instructions. In this type of situation, the teacher was the sole transmitter and learner the recipient of knowledge. The literature with reference to ICT as a pedagogical tool positions the teacher at the role of a facilitator guiding the learner. This implies that the learner constructs his/her own learning– a student centered type of approach. (Castro Sánchez and Alemán 2011) highlighted the importance of ICT in transforming a teaching environment into a learner-centered one. This is because the learners are highly likely to be actively involved in the learning processes. This constructive notion of learning as it relates to teachers' ICT skills was not indicated in this study. As already noted, participants perceived the importance of developing computer skills so they can present power point presentations for the learners. This implies transmitting information to students suggesting that the teacher is still very much in control of the teaching and learning situation i.e., construction of information is still very much lies with the teacher. This is in stark contrast to the situation where students contract their own learning. Teachers of the 21st century should be facilitator as opposed to being just a transmitter of knowledge (Coleman et al. 2016).

It is crucial that students are given the authority by the teacher to make decisions and planning using the computer skills that students may have already (Lu et al. 2010), as in such manner the learner is very much in control of the learning situation. At the same time this type of approach will provide both teacher and learner with more educational possibilities (Lu et al. 2010). If one aims for a more student centered classroom (an idea that is also promoted in several Samoan education documents and policies), the importance of getting teachers to be knowledgeable in using ICT as well as getting their students to use it themselves to solve their learning problems cannot be overstated. Therefore integration of ICT in teacher education can make this possible for in this type of situation, the focus will then shift from the teacher to students, where the student becomes the focus of the teaching and learning process (Coleman et al. 2016).

Participants highlighted some challenges which pertained to the institution as well as to students themselves. These issues need to be addressed by the institution if it aims at producing effective teachers for the future.

Limitations

A number of factors may have skewed part of the findings especially in connection to teachers' perception of ICT as a pedagogical tool and as a resource. For example, in the current study, the researchers failed to delineate for participants' the concept of ICT as a tool in the hand of the teacher (for teacher usage) or in the hand of the learner (for learner usage). We believe that if the researchers had clearly clarified this from the outset, a different picture could have emerged.

Findings clearly indicated participants' limited knowledge of ICT which could have influenced their own responses. Teachers' perceived limited knowledge could be due to the fact that the majority of participants of the current study do not own a personal computer– their only access to a computer is at the university.

These anomalies seemed to suggest that participants' have not the adequate understanding of technological knowledge on which to base their narratives. This may have affected their own interpretation of the question related to ICT as a pedagogy tool as well as ICT integration into teaching and learning. According to (Mishra and Koehler 2006) a teacher with good technology knowledge (TK) is highly likely to integrate technology into their classroom instructions. However, according to the findings a number of participants do not seem to have this TK as noted here:

Yes, sometimes I don't understand how to use some keys when using the computer to find information (p.19)

It is imperative for the training institution to ensure that teachers computer skills are developed so that they are in a better position to act as facilitators and not mere transmitter of knowledge in the teaching and learning context. (Mishra and Koehler 2006) viewed the knowledge of technology and content as reciprocally related. They emphasized the importance for the teacher to have both a good knowledge of the subject matter as well as knowledge of how the subject matter can be utilized through the technological application.

Conclusion

The current study indicated that participants have some ways to go in understanding and using ICT skills in the classroom; so the learning environment will be more student centered with students constructing their own learning. The study indicated that participants viewed ICT as useful in relation to teachers' professional development. While there is rationality in this perception, the challenge however is; the teacher is still placed in the center of the teaching and learning process. This seems to contradict with the more student centered approach to teaching and learning which has been promoted in education policies over the past two decades.

There is a grave need for teachers to understand how to integrate the modern day technology, into their teaching and learning so the approach to learning become more constructive resulting in self-regulated learners. In this respect the teacher will be more of a facilitator and a guide as opposed to just being someone to communicate knowledge to students.

What is worth considering however is the fact that teachers cannot turn into a computer savvy on their own. They need to be exposed to relevant and appropriate computer programs if they are to be professionally prepared. Therefore, the training institutions need to offer appropriate and relevant ICT programs for teachers to develop their ICT skills. Furthermore, the training institution should look at improving computing facilities/ infrastructures as well as improving skills of tutors to effectively support students in their academic pursuit.

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