DEVELOPING FIJI: MEASURING THE CONCERNS OF PRE-SERVICE STUDENTS FOR ICT IN EDUCATION

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Abstract

The intrusion of technologies in our daily lives has increased the competition in almost all the fields and due to this, the scholars of the present times are expected to be equipped with better problem solving skills, techno-friendly nature and critical analysis abilities. In order to provide the necessary guidance to the students of modern times, it is necessary for the teachers to encourage the students to opt for more technical approach in the studies. The approach of the teachers, however, does not seem to be one minded. While some of them have accepted the changes in conventional teaching methods whole heartedly, there are still some who have out rightly rejected the idea of this change. In this research, we have analyzed the approach of the pre-service students who are pursuing bachelor of education in Social Science from Fiji National University, one of the leading universities of Republic of Fiji. For this analysis, we have used CBAM model which has been widely used since years for measuring concerns of people regarding the changes in the working environment. In our analysis, it was concluded that the pre-service students had high concerns at the Self-oriented levels while a very low concern was shown at the external levels (Consequence, Collaboration and Refocusing). We have also pointed out some of the solutions that can lead these students to develop their concerns from internal level to external levels.

Keywords*:* Stages of Concern, CBAM Model, Fiji National University, Pre-service, SoC Questionnaire.

Introduction

Information and communication technologies (ICT) are primarily used to provide information through telecommunications. ICT is similar to the Information Technology in some aspects but the basic difference between them is that ICT focuses on communication technology. The information and communication technologies have been playing a vital role in the education field since last two decades and it has been over a decade since UNESCO has recognized ICT as one of the major force which can be used for shaping the global economy and account for the rapid changes in society. Various research reports have advocated that ICT in education provides the students a better exposure, positive impact in terms of achievements and overall a better knowledge acquisition.

"... For education to reap the full benefits of ICTs in learning, it is essential that pre-service and in-service teachers have basic ICT skills and competencies. Teacher education institutions and programmes must provide the leadership for pre-service and in-service teachers and model the new pedagogies and tools for learning."

The students of this era face various challenges to sustain in the competitive environment. These challenges include the problem solving skills and critical analysis of the problems. According to Darling-Hammond (1995), these challenges can be fulfilled using high end technologies in the education of the students. This fact was proved correct by Waissbluth (2010) whose study stated that the same students and same teacher can provide a much better result when they are equipped with ICT as compared to the conventional teaching methods. The role of ICT in education has been very important for various reasons. First of all, ICT facilitates the students from different campuses and universities to share the learning resources. ICT enables the idea of collaborative learning (Riel, 2000) which supersedes the idea of individual learning. In addition, ICT provide an environment of autonomous learning where the students can extend their knowledge with the teacher acting as a guide. Dede (1998) showed that while using ICT in education, the students have improved memory, motivation and understanding as compared to the conventional methods.

A major challenge that ICT faces in its implementation in education sector is the adaptation of teachers to the new innovation. The implementation of ICT in education brings about vast changes in the teaching methods, assessment methods and evaluation methods. The changes that ICT brings about in education is not only limited to the students but it also brings about a comprehensive changes in a teacher's role. The challenge that ICT faces is how much the teachers are willing to adapt it. The idea of relinquishing the control to the technologies is one of the biggest barriers in its implementation. Littlejohn (1999) stated that while there are teachers who

are willing to accept ICT whole heartedly, there are also some teachers who have out rightly rejected the idea.

The Republic of Fiji has been one of the most developing countries which is trying to accommodate the ICT in education. In this research, we have studied and analyzed the concerns of the pre-service students who are pursuing Bachelor of Education in Social Science stream from Fiji National University towards the implementation of the information and technologies in education.

Related Works

The role of ICT in education of social science has been discussed for a long time. In 1998, Chris Durbin (Joke van der Leeuw-Roord) has stated that the teaching of history can be vastly affected by the use of information and communication technologies. According to Chris Durbin, the independence of students for accessing large volume of data will enable them for autonomous learning. Lokman and Stephanie (2001) studied the social science teachers and concluded that the information and communication technologies have enable the teachers to locate particular government information and library collection. Borgman and Smart (2005) have stated that the social science teachers seek a wide area of research interest ad under graduation teaching which can be effectively fulfilled by the use of the digital libraries. Hemming (2008) has also showed that the teachers need audio-visual resources to teach their students effectively.Bhatti, Asghar, Mukhtar and Chohan (2011) founded that the teaching methods have changed in BahauddinZakaryia University, Pakistan since the advent of internet and also proved that the social scientist use the e-resources more than the printed materials. In their study, they have also stated that the increase in the internet speed will help these scientists in a more efficient manner.

The major determinant in implementation of the ICT in education is the attitude of the teachers in accepting the changes in teaching methodology. Zhao and Ziko (2001) have stated three reasons which would determine the success of implementation of ICT in education which are: teachers' belief in the efficiency of technologies, teachers' belief that these technologies will not disturb their own teaching method and teachers' belief that they can effectively control these technologies. Demertriadis et al (2003) have further justified the given reasons by stating that the teachers need consistent support and training which makes them believe that they are in control of the technologies.Kington, Harris and Leask (2002) have stated that the role of the technology is not the only determinant in its successful implementation but also the approach of the teachers who are going to use the technologies in their teaching methods.The research work by Smeets

(2005) revealed that most of the teachers are ignorant of the potential and efficiency of the ICT in education.

Fiji School Education System

The Republic of Fiji has primary, secondary and higher education schools in their education system. The medium of teaching is mainly English due to multi-ethnic culture of country. The primary school provides education for children of 6 to 14 years for 8 years. The secondary school is attended by the students who have obtained a certificate after completing their primary school education. The secondary school consists of Form V, Form VI and Form VII after which the student can opt for higher education in the universities in Fiji (Fiji National University, University of South-Pacific and University of Fiji).

The ICT implementation in secondary schools of Republic of Fiji was programmed in 1993 but it came into practice in 10 schools from 1996 (William et al 2004). The success of this pilot program has encouraged other schools to go for this curriculum in schools and by 2002, 74 schools had this program in their curriculum. This number increased to 86 in 2004 owing to the importance of the information and communication technologies in education.

Concerns-Based Adoption Model

The theoretical base of our research work is formed by the Concerns Based Adoptions Model (CBAM). The Concerns based Adoption Model was basically devised by Hall (1974) which was on the lines of the research works done by Francis Fuller in 1960s. Francis Fuller stated that when a change in introduced in the method of teaching, there are concerns on both ends, the students as well as the teacher. These concerns vary from self-oriented level (initial level) to the task-oriented level and finally to the impact based level (final level). The CBAM model developed by Hall in 1974 could identify the concerns of an individual regarding a change. The research and development center at University of Texas has come along a long way with this research and explored new dimensions which are related to CBAM. The major works done by the center include Levels of Use of the Innovation (Hall et al, 1975), Innovation Configurations (Hall & Loucks, 1978) and Intervention Taxonomy (Hall, 1979)

The CBAM model works on three major constructs. These constructs are used to predict, explain and measure the experience and concerns of a teacher owing to the change in the working environment. The first construct of the CBAM model is known as the Stages of Concerns (SoC) (Hall, George, & Rutherford, 1978, 1979). This construct has been designed to analyze the concerns of the individuals with regards to the new innovation

that is being applied. The second construct in CBAM model was mainly designed to check the knowledge and the behavior of the individuals with respect to the new innovation being introduced. . This construct is known as Level of Use (LoC) (Hall et al, 1975). The third construct of the CBAM model was derived from the fact that any change is variable and is subjected to the situation of the real world environment. This construct is known as Innovation Configuration(Hord, 1986).

Stages of Concern

Stages of Concern were developed by Hall following the lines of the works done by Francis Fuller. The Stages of Concern explain the concerns that an individual may have when they are subjected to a change in working environment. There are seven different concerns which were dealt in Stages of Concerns; however, they can be categorized in to three major classes: self-oriented concerns, task-oriented concerns and impact-oriented concerns. According to Persichitte et al (1996), at any given time, the individual is expected to be concerned about one of the level more than other remaining one. The stages of concerns have been divided into seven types of concerns which are as follows:

Stage 0Awareness: The awareness stage is the preliminary stage where the teachers are not often aware of the innovation. Also, it is considered that the teachers at this stage are not concerned about the innovation.

Stage 1Informational: At the informational stage, the teachers want to learn more about the innovation. They demand the knowledge related to the innovation and seek information.

Stage 2Personal: At the personal stage, the teachers are concerned about the effect the innovation can have on them. At the personal stage, teachers are interested in how they will beaffected by the innovation. It is considered that the teachers normally go through this stage when they are notified by the university or the school about the implementation of the innovation.

Stage 3Management: At the management stage, teachers are mainly concerned about the management of the resources and the time which will be consumed by the implementation of the innovation.

Stage 4Consequence:At this stage, it is considered that the teachers have already accepted the innovation and now they are concerned about the impact that this innovation can have on their students. The teachers at this stage are concerned about the performance and the competencies of the students while using the innovation.

Stage 5Collaboration: Teachers who have concerns at the collaboration stage are supposed to be concerned about working in a

collaborative environment. At this stage, the teachers are expected to share information among them for improved performance.

Stage 6Refocusing: The final stage of SoC, Refocusing mainly covers the teachers who have high concerns about the time and cost of the innovation and are ready to implement the alternatives of the innovation that may perform even better.

Methodology

For the analysis of the concerns of the pre-service students of the Fiji National University, the Stages of Concerns Questionnaire (SoCQ75) was used. The copyright was obtained for the use of the questionnaire from Southwest Educational Development Laboratory (SEDL). Along with the questionnaire, a demographic form was also attached for the students detail regarding their age, gender and if they have gone through any formal ICT training before.

There were total 59 participants who took part in this survey. These participants are pursuing Bachelor in Education (Social Science) program from Lautoka campus of Fiji National University. 5 forms out of 59 were rejected due to the incomplete demographics and questionnaire. Before the participants filled up the survey, they were intimated that the term "innovation" in the questionnaire basically refers to the implementation of information and communication technologies in education. These participants were also told about the purpose of this work.

Out of these 54 valid participants, there were total 25 males and 29 females. All the participants belonged to the age group of 21-30 years and will be moving to the schools next year for their practicum training for the completion of this course.

Results and Discussion

The survey forms completed by the participants were analyzed using the methods described in the manual for use of SoC (Hall 1977). The analysis of the results was done in three ways. In the first method, we analyzed the results group profile wise and gender profile wise. The second method was to analyze the peak concerns of the individuals and the third method was to analyze the first and the second highest concerns of the participants.

The group profile wise results have been depicted in Figure 1. According to the figure, the participants showed very high concerns at self-oriented levels i.e. 85.41 at Information level, 82.81 at personal levels and 76.89 at awareness level. This result shows that the students have very little or no awareness about the ICT implementation in the education field. The participants also showed very low concerns at Impact levels (57.28 at

Consequence Stage, 63.89 at Collaboration Stage and 67.76 at Refocusing Stage). Overall, it can be deduced that the participants have still not been able to accept the role ICT in education.
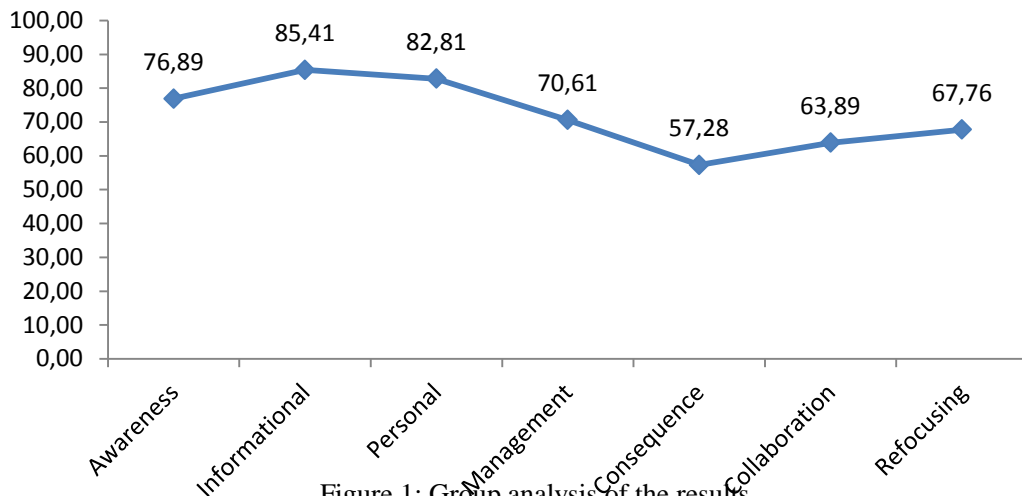

Figure 1: Group analysis of the results

When the gender wise results were analyzed, it was observed that both male and female participants had very high concerns at self-oriented level. However, when compared at awareness concern level, the male participants had relatively high concerns than females. Thus, it can be said that the percentage of male participants having very little or no knowledge at all about the innovation is more than the percentage of female participants. Both, male and female group reported very low concerns at the external level (Consequence, Collaboration and Refocusing level).
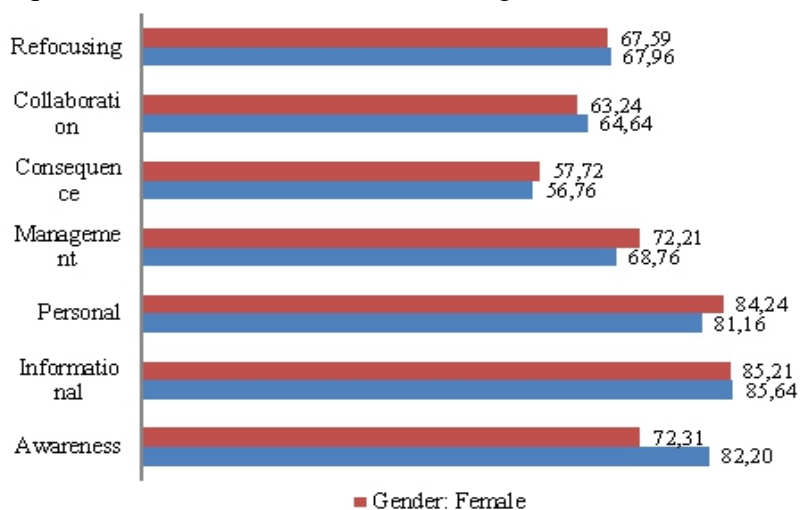

Figure 2: Gender-wise analysis of the results

Analysis of individuals' peak concerns

During the analysis of the individuals' peak concerns; it was observed that the number of participants having Self-oriented concerns as their peak concerns was 49 out of 54. As it can be seen that a very high percentage (90.73%) of participants reported their peak concerns in self-oriented stages, according to Hall et al(1979) and Rogers (1992), it can be interpreted that majority of the participants are non-users who have no information or awareness regarding the implementation of ICT in education.

SoC level	Frequency	Percentage
Self-concerns	49	90.73
Task concerns	3	5.54
Impact concerns	2	3.73
Total	54	100.00

Table 1: Frequency and percentage of individuals peak concerns

In the analysis, it was also observed that a very low percentage of the participants were concerned at Task-oriented and Impact-oriented concerns (5.54% and 3.73% respectively).

Analysis of first highest and second highest concerns

A 3x3 matrix was designed for the analysis of the highest and second highest concerns of the pre-service students. This matrix consisted of the nine cells which were represented self-self-concerns, self-task concerns, self-impact concerns, task-self concerns, task-task concerns, task-impact concerns, impact-self concerns, impact-task concerns, and impact-impact concerns. The frequencies of the participants were filled in each of the cells for the analysis.

In the analysis, it was observed that both male and female participants had high percentage in self-concerns (80% and 65.52%). The percentage of the mix concern participants was 20% for male and 34.48% for female participants.

Gender	N	Self-Concern Teachers		Mix Concern Teachers	
		f	%	f	%
Male	25	20	80.00%	5	20.00%
Female	29	19	65.52%	10	34.48%

Table 2: Patterns of concern related to gender basis

Conclusion

This research concluded that the pre-service students of Department of Social Science had very high concerns at self-oriented level which indicated that the participants are unaware or unconcerned about information and communication technologies in education. As stated by Rogers and

Mahler (1994), this lack of awareness about ICT in education of the students can be explained with the following reasons: failure in providing the participants with enough knowledge of the ICT implementation in education, failure in involving these students in the implementation process and failure in providing the students enough resources and training.In order to successfully implement ICT in education, it is necessary that these students' concerns are developed from self-oriented concerns to the impact oriented concerns. Karel Holloway (2003) has suggested some important steps that can be taken for this issue which are:

(a)   Organize discussion sessions for the students and share the information that can help them to know more about ICT in education.
(b)   Making efforts to relate the participants' current practices to ICT in education.
(c)   Providing a collaborative atmosphere where the students can work together to implement the information and communication technologies in education and share their skills for new innovations.

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