AN EMPIRICAL STUDY ON PROFESSIONAL EDUCATION INSTITUTION (PEI) TEACHERS : THEIR READINESS TO CHANGE THE PEDAGOGY IN THE CLASSROOM SPECIAL REFERENCE TO DELHI NCR REGION

[1]Dr. B.K.Roy (Professor)
Principal, Gyan Ganga Institute of Technology and Sciences

[2]Dr. Monalisha Roy (Assot Proff.),
Gyan Ganga College of Technology

ABSTRACT

Technology has become a defining force in our lives, and its relevance is spreading to virtually every field in one way or another. While some people may go their entire lives never needing to recall the knowledge they gained in various classes throughout their educational career, their experiences with technology will most certainly come in to play very early during their adulthood.

The growing body of literature associated with educational computer use has examined numerous variables and interrelationships in order to gain a better understanding of computer beliefs and use of computers within education. Teachers' computer acceptance is an important factor to the successful use of computers in education. Thus there is a need to examine the factors affecting teachers' computer use and its implications to teachers' professional development strategies. In this research paper is focused on the relationship between actual usage of computer (AUC) and technology acceptance constructs among Professional Education Institution (PEI) teachers in India.

Overall, the study found that the AUC among Professional Education Institution (PEI) teachers were at the moderate level. Meanwhile, the constructs of attitude, perceived usefulness, perceived ease of use, job relevance, and computer compatibility showed significant positive relationship with AUC. Practical recommendations for Professional Education Institution administrators and teachers been discussed.

Keywords:
Information technology, actual usage of computer (AUC), Professional Education Institution (PEI) teachers, classroom, India

Introduction

Technology has become a defining force in our lives, and its relevance is spreading to virtually every field in one way or another. While some people may go their entire lives never needing to recall the knowledge they gained in various classes throughout their educational career, their experiences with technology will most certainly come in to play very early during their adulthood.

Colleges have taken steps towards online learning by giving students access to professors virtually that otherwise might have an overcrowded and counterproductive learning environment as a result. Assignments are given out and handed in more efficiently, and professors are able to use more of their time with students individually as their office schedules are easier to manage. Many students have to work their way through college to support themselves while receiving an education. This is

much easier with a more flexible online schedule and for those that don't have the ability to move to another state, the college they wish to attend is just a few mouse clicks away.

Is this where grade-school level education is headed? I can't say for certain that is the case, though it would be beneficial for students to have access to some of the greatest minds in the country during various lectures and lessons versus receiving their entire curriculum from local teachers that may or may not have the knowledge to present their content with the most efficiency.

Bottom line, if you're not connected to the Internet, you're not learning as effectively as you could be. Face-to-face interaction is important for students. No one is denying that. What is being ignored by some districts is the importance of keeping technology within grasp as a way to prepare the student for the world that's ahead of them. The workplace requires you, now more than ever, to know the ins and outs of whatever operating system they work with. If you wish to move up, you'll need to prove again and again that you know how to navigate technology. Sometimes, having that little bit of extra knowledge can really make a difference in your salary and lifestyle down the road.

A technological revolution is happening in the world of education; it is changing schools for the better. But, it will never change the definition of and need for great teaching.

Organizations of all types and sizes, including Educational Institutions have recognized that the usage of computers in the work environment is important as it presents with unprecedented challenges that helps individuals to acquire an inquiring, critical and creative mind to capitalize on the opportunities driven by the explosive growth of information, knowledge and technology. Indeed computer technology had begun influencing students' learning experience for more than 25 years ago though it was only in a moderate manner (Cuban, 2001). However, for the past decade there is a major push toward integrating computer technology into classrooms because of the vast promise it offers such as cheap, accessible and instantaneous information, enormous potential for interactivity and media-rich communication and powerful educational tools it will put at the service of students (Mouza, 2002). Geisert and Futrell Teachers' Readiness to Use Technology in the Classroom: An Empirical Study (2001) exclaimed that if teachers were to revolutionize their classrooms with computers, ordinary students would make massive gains, wherever illiteracy is a problem, it would be dissolved, and students would have immense new vistas opened to them. Moreover, policy makers hoping to improve the quality and quantity of student learning have become increasingly willing to make major investments of fiscal and human resources into hardware, software, and training.

Information technology (IT) has opened wide opportunities for educators to integrate technology-supported materials in the teaching-learning process and to improve the achievement of students (Jonassen, 1995). The use of computer-aided technology in the classroom will, no doubt, inspire the teachers to approach their tasks with a greater sense of purpose and, more importantly, a sense of play to make the learning process fun for students. Using computer-based technology such as data-logging and simulations is important for modeling subjects such as science and mathematics. Modeling is an important part of science and computers are good for modeling things such as nuclear testing and molecules calculations. Furthermore, the availability of vast amounts of up-to-date information in the teaching and learning of different subjects are found on the World Wide Web. The internet provides far more up-to-date information than text books. Besides, looking for books and go in search for them and then discovering that it is not the one that has the kind of information you want can be time consuming and frustrating. The Net, on the other hand is very

efficient. Up and above that, textbook can become obsolete without up date information that could misguide students into believing that there is no further development after that discovery.

Students generally enjoy using the computer and with enjoyment come motivation. In particular, the presence of computer-based technology changes the way subjects such as science and mathematics is being taught. It is believed that the current era relate to computers as part of their up-bringing and being relevant in a technologically oriented society. In the homes of increasing number of students, computers play an essential role in students' recreation and learning. It changes the way different subjects such as science is taught as IT tends to accord more closely with the way students think (Dywer, 2000).

Undoubtedly the recent advancement in information technology innovations and computer usage is rapidly transforming work culture and teachers cannot escape the fact that today's classrooms must provide technology-supported learning (Angers & Machtmes, 2005). Being prepared to adopt and use technology and knowing how that technology can support student learning must become integral skills in every teacher's professional repertoire. Initially from the District and school policy and professional development workshops and training are designed to positively influence teachers' adoption and usage of computer technology. However, the usage of computer technology in the classroom has been slow over the years (Krysa, 1998).

LITERATRE REVIEW

Recognizing the paramount of importance of information technology, many countries including India have formulated special projects to enhance the usage of information technology. In the last two decades, Indian schools have experienced a dramatic growth in the use of computer-based technology for education purposes. The Indian government would implement the teaching of mathematics and science using softwares in English language in schools and the indian Education Ministry has given support and assistance to the teachers in the form of providing Information and Communicating Technology (ICT) facilities, that is, ICT tools and teaching courseware's for use by the teachers to teach besides giving them additional financial incentives.

Moreover, the **Indian Government** had also allocated special budget for the training of teachers and they were given three types of training that is English Language proficiency training, Curriculum Orientation and Pedagogy Course, and ICT Usage (Hishammudin, 2005; Sharifah, 2008). Such training or retraining is essential to give the teachers the confidence and the necessary skills to enable them to actually use the computer in classroom. Besides, the on-going massive distribution of the IT tools presently almost all institutions are equipped with IT tools. In line with this, teachers should be ready to adopt and use computers and students should benefit and be geared towards the realization of vision 2020. The investment on teachers are also anticipated to create a technologically literate workforce who in turn would generate a future generation that would be competent and confident to perform in a global, IT-intensive work environment. However, in the school settings, one of the major obstacles faced is the non-extensive usage of computers by the educators for classroom instruction. Clearly, something should be done to identify the root cause of this problem.

In **Malaysia,** a goal has been set by the Ministry of Education that by the year 2015 all schools should be using computers to teach Mathematics, Science and English language then only we can achieve the target of higher education.

Such policy requires teachers to integrate information technology in the process of teaching and learning. However, in the preliminary observations it was found that teachers are not fully utilizing

these facilities in their teaching. Although teachers are sent in batches for training to gain knowledge and skills in the Actual Usage of Computer (AUC) and ICT equipment, many have returned only to fall back onto their traditional mode of teaching. On average the teachers in Indian schools only used ICT equipment for about 29 hours in the two year period which is considered to be very low (MHS, 2005).

According to Carlson and Gadio (2003) teachers' acceptance of technology is absolutely essential if technology provided to schools is to be used effectively. Simply put, it would be a sheer waste spending resources equipping institutions with computer hardware and software without taking into account whether teachers' are comfortable using computers. Studies carried out around the world in developed, industrialized and information based countries showed that teachers' use application of technology is the key determining factor for improved student performance in knowledge acquisition and skills development enabled by technology (North Central Regional Educational Laboratory, 2002).

Educational technology is not, and never will be, transformative on its own - it requires teachers who can integrate technology into curriculum and use it to improve student learning.

Thus, it is clear that computers cannot replace teachers since teachers are the key to whether technology is used appropriately and effectively. Even if there are students who could learn independently how to use technology to enhance their learning and skills development, with little or no improvement from their teachers, they are highly unlikely to improve since teachers remain the gatekeepers for students' access to educational opportunities afforded by technology (Stryker, 2000).

Hence, it is important for teachers to be computer literate, and be prepared to use information technology in institutions. Many attempts have been made to gain insight on the adoption of computer by secondary school teachers (Faw, 2005; Martin & Ofori-Attah, 2005; George, McEwin & Jenkins, 2000; Kellenberger & Hendricks, 2000; Brunner, Cornelia & William, 1999; Gibbons & Fairweather, 1998). Gibbons and Fairweather (1988) state that generally teachers use computers not just for the process of teaching and learning but also for a number of other reasons, though they may deem to be job-related.

Furthermore, Martin and Ofori-Attah (2009) and Kellenberger and Hendricks (2012) identified that the teachers are divided into three main components namely, for teaching purposes, administration purposes, and personal purposes. In terms of teaching and learning, the actual usage of computer by the teachers in classrooms is mainly to impart knowledge, create variety, and to give them the confidence in the process of teaching and learning (George, McEwin & Jenkins, 2000; Kellenberger & Hendricks, 2000). Besides, Martin and Ofori-Attah (2005) state that teachers also use the computer to ease their administrative works especially in preparation of job-related materials.

RESEARCH METHODOLOGY

Self-administered questionnaire was employed to gather data for this study. The AUC means the intensity of the computer usage by the teacher which would be measured in terms of how frequently the computer is used for job related and personal tasks. Hence, the AUC is divided into three subscales of (a) teaching and learning, (b) administration, and (c) personal needs. Forty three items were used to measure the AUC on a Likert scale with continuum from "1" equivalent to "never" and "5" represented "always". The AUC instrument developed by Kellenberger and Hendricks (2000) was adapted, refined and used in this study due to a number of reasons. The instrument focused on the AUC by teachers. Moreover, the instrument was comprehensive in the

sense that it divided the AUC by teachers in not only preparation for /actual teaching and learning but two other elements, that is, administration and personal needs. This is believed to give a better picture on the AUC by the teachers. A total of eighty six items were used to measure the technology acceptance constructions. Each statement of the instrument was measured on a common Likert scale, continuum of 1 to 5 with "1" representing "strongly disagree" and "5" representing "strongly agree". The items in the technology acceptance constructs were adapted from prior studies which have already established their reliability and validity (Davis, 1989, Hu et al., 2003; Luarn & Lin, 2004; Malhotra & Galletta, 1999; Shih, 2004, Venkatesh & Davis, 1996). The accessible population in this study are the teachers of the professional institutions from Delhi NCR region . The total sample size for this study was 358. Data are collected with the help of principals of the respective Institutions and Head of the Institutions. Out of 358 distributed questionnaires, 318 valid responses were obtained and used in the final analysis. Descriptive statistics and Pearson Product Moment Correlation were performed using the Statistical Package for Social Sciences (SPSS).

FINDINGS AND DISCUSSION

Actual Usage of Computers (AUC)

Previous studies have shown that the teachers in India have low and moderate levels in their AUC and this may adversely affect the successful implementation of the education policies, and in the long run, the attainment of the goals of Vision 2020. To overcome this problem, the Indian Government has embarked on intensifying computer training programs for teachers to ensure that they have the adequate knowledge and skills in the IT arena. The levels of AUC among the respondents were based on the mean scores of the three subscales of the variable. Three levels of AUC were categorized and they were Low ($1.00 \leq M \leq 2.50$), Moderate ($2.50 \leq M \leq 3.50$), and High ($3.50 \leq M \leq 5.00$). The findings as in Table 1 shows that majority of teachers were still experiencing moderate levels in terms of their AUC whereby it accounted for 61.6% of the total respondents with a mean score of 3.39 and a standard deviation of 0.35. However, none of the respondents were at the low levels of AUC while 38.4% account for high level. The nature of such a finding that states an overall low level of AUC that was negligible could imply that the various training programs that have been conducted throughout the years have proved to be beneficial

Table 1:Descriptive statistics for AUC and its Subscales (N=318)

Variable	Level	n (%)	Mean	SD
Overall Actual Usage of Computer	Low 0 (0) Moderate196 (61.6) High122 (38.4)		3.39	0.35
Teaching and Learning	Low 0 (0) Moderate 205 (64.5) High 113 (35.5)		3.44	0.38
Administration	Low 0 (0) Moderate 205 (64.5) High 113 (35.5)		3.94	0.42
Personal Needs	Low 150 (47.2) Moderate85 (26.7) High83 (26.1)		2.79	0.44

Note: Low($1.00 \leq M \leq 2.50$); Moderate($2.50 \leq M \leq 3.50$); High($3.50 \leq M \leq 5.00$)

It is also note worthy that this study was conducted in urban and semi-urban region of Delhi NCR where most institutions may be equipped with computer laboratories. Furthermore, most teachers are also have lap-tops to encourage the computer usage in the teaching-learning process. It could be due to these reasons that a moderate level of AUC was attained. It cannot be discounted, however that the teachers have not shown a high level of AUC. This would be further elaborated and discussed later. In the mean time, it is good to note that the findings of this study suggest that more teachers are using computers.

The survey, however pointed to an alarming state of the actual finding. Instead of the AUC for the subscale of Teaching and Learning, the high usage was found to be for the subscale of Administration works. It was at a moderate level for the subscales of Teaching and Learning (M =3.44, SD=.38) and Personal Use (M
=2.79, SD=.44). The reason for the inclusion of the levels of AUC in these three categories namely, Teaching and Learning, Administration works and Personal Use, was to find out the accessibility and ease-of use of computer by the teachers. It reflected instead that most of the teachers seem to use the computer for the administration works rather than to teach or prepare teaching materials. This could be so due to the fact that teachers, in general, are now burdened with numerous administrative works such as keying personal data, students' data, marks and preparation of examination questions and mark schemes. On top of that, most teachers, could be form teachers and also teacher-advisors of various clubs, societies and games. These too demand much of the teachers' AUC in the preparation of numerous forms, letters, timetable, schedules and reports.

The fact remains that teachers need to use the computer more for teaching and learning purposes rather than administrative works. The teachers' preference to the AUC to be used in the classroom should be supported by the authorities with no interference of any kind (Chong, Sharaf & Jacob, 2005). Therefore, the policy makers must take into account of the present scenario and consider the seriousness of this matter.

Relationship between Technology Acceptance Constructs and AUC

Table 2 depicts the level of technology acceptance constructs of teachers. The mean ratings for the technology acceptance constructs in descending order of high to low are attitude, computer compatibility, perceived usefulness, perceived ease-of-use, job relevance, subjective norm, and computer self-efficacy. These constructs were measured on a five-point scale ranging from "1" strongly disagree" and "5" "strongly agree".

Table 2: Descriptive statistics for Technology Acceptance Constructs

Variable	Mean	Std. Deviation
Attitude	3.6795	.28871
Perceived Usefulness	3.5023	.35518
Perceived Ease of Use	3.3808	.40709
Computer Self Efficacy	2.6293	.38901
Computer Compatibility	3.5548	.41377
Job Relevance	3.3339	.31255
Subjective Norm	2.9240	.30911

The following discussion will focused on the nature and the strength of correlation between respondents' AUC and the technology acceptance constructs. In doing so, it helps to identify to what extent technology acceptance constructs independently influence the AUC among teachers. The

relationship between AUC and technology acceptance constructs was investigated using the Pearson-Product Moment correlation coefficient and the relationships between each of these variables are depicted in Table 3.

Table 3:Pearson's Correlation between AUC and Technology Acceptance constructs

Variable	AUC	Teaching &learning	Administration	Personal needs
Attitude	162**.	144**	186**.	.278**
Perceived Usefulness	.526**	.265**	.377**	.282**
Perceived Ease of Use	.590**	.120*	.496**	.347**
Computer Self Efficacy	-.006	-.020	-.108	-.081
Computer Compatibility	.268**	.144**	.101**	.206**
Job Relevance	.462**	.085*	.379**	.282**
Subjective Norm	.107	.045	.251	.023

Note:
** Correlation is significant at the .01 level (2-tailed)
* Correlation is significant at the .05 level (2-tailed)

Attitude and AUC

Attitude in this study is referred to a teacher's general feeling of favorableness or unfavorableness toward computer. It is important to take into account the influence of attitude toward AUC since if teachers demonstrate proficiency in integrating computer technology in the process of teaching and learning but do not believe that computer technology has a use in the classroom, then they will probably not teach with computers despite their proficiency (Ropp, 1999). Numerous studies have shown the impact of attitude in predicting the AUC (Shih, 2004). Previous literature suggests that positive attitude would bring forth to a higher AUC. Similar result was found in this study whereby there is a significant positive relationship between attitude and AUC (r=.162, p=.003) of teachers.
Moreover based on this study, it can be construed that teachers who viewed computer technology as positive were able to demonstrate greater usage of computer while those who viewed technology from a negative perspective did not acquire and integrate knowledge and skills on computer technology in their classrooms.

Perceived Usefulness and AUC

Past studies have also investigated the impact of perceived usefulness and perceived ease of use on AUC and have identified signified positive results between these constructs (Hu et al., 2003). The findings of this study identified identical results. There was a significant positive relationship between perceived usefulness and AUC (r=.526, p=.0001) teachers. The positive relationship points out that as the perceived usefulness of computer amongst teachers' increases, they experience better AUC. This is not surprising and it could be influenced by several factors and the most important of them all is that as teachers find the application of computer technology to be more useful, they would be determined to make full use of it.

Perceived Ease-of-Use and AUC

There had been contradictory ideas on the significant effect of perceived ease of use on AUC as some researchers found evidence of the significant effect while others proved otherwise. In this study, it was identified that there was significant positive result between perceived ease of use and AUC of teachers. However, in comparison based on the magnitude of relationship, it was found that perceived ease of use (r=. 590) has a slightly higher magnitude compared with perceived usefulness (r=.526) on AUC among teachers.

Based on this comparison, it could mean that perceived ease of use does have a great impact on AUC. This implies that teachers are likely to accept a technology simply because it is easy to use.

Computer Compatibility and AUC

The finding of this study revealed that computer compatibility plays an important role in determining the AUC among teachers. There was a positive linear relationship between computer compatibility and AUC and the strength of the relationship is (r=.268, p=.0001). Teachers perceive the importance of being compatible with computers as something that need to be given due attention for their AUC. Hardware and software compatibility unswervingly has an impact on a teacher's perception of a technology. By being compatible with computers they would have the depth of knowledge and understanding of computer hardware and software, how they function, and their advantages and disadvantages. Hence, the conclusion is that the higher is the teachers' computer compatibility perception, the greater is the AUC among teachers.

Job Relevance and AUC

Many researchers have explained that relevance of computer technology on teachers toward their jobs is a significant factor in the implementation of computers in education .Teachers felt that their adoption of computer technology was successful and satisfactory when they could use it to seek and obtain job relevant information. The study showed positive linear relationship between job relevance and AUC (r=.462, p=.0001). The finding implied that teachers generally view the importance of computers towards their job as important in determining their AUC .

Computer Self-Efficacy and AUC

Previous studies have shown the impact of computer self-efficacy towards AUC. It is commonly known that if one believes that he or she has the ability to perform specific tasks, then he or she would be determined to accomplish the task (Compeau, Higgins, & Huff, 1999). For example if someone believes of his or her ability about using a software package, then he or she would have the confidence to use a computer. The data obtained from this study showed that there was no significant linear relationship between AUC and computer self-efficacy. The majority of the respondents are having moderate levels in their AUC thus computer self- efficacy does not have an impact on their decision to use the computer.

Subjective Norm and AUC

In this study, subjective norm is referred to the working environment that influences an individual to make decisions. It was identified that there is a positive and significant relationship between subjective norm and AUC . Teachers' readiness to use computer technology would increase with strong support from their colleagues, administrators, and communities. The finding of this study showed that AUC is autonomous from the influence of subjective norm. Thus, the results imply that generally teachers have the ability and confidence to use computers, and they are self-directed in terms of the usage of computers.

Conclusion

The study showed that the AUC among teachers are at the moderate levels and thus more efforts need to be undertaken by teachers to improve on their usage of computers. These include investing in getting a computer besides taking their own initiative to acquire knowledge and skills pertaining to computer technology. The moment the teachers see the light that the AUC makes the lesson interesting, exciting and easier to teach, they would perceive its usefulness and job relevance. It is the attitude of these teachers that need to accept the fact that teaching with the AUC is contemporary and teaching the old style will make them archaic. The benefits from the AUC must be realized as compatible and manageable.

Policy makers appear convinced that computer technology is essential if students are to be prepared to face the challenges of the borderless world. It is undeniable then that computers have become a potent production tool and it offers exciting approaches to teaching and learning, and if this technology is used extensively, and in proper manner, it could bring progress that would improve education radically. Institution administrators must lead the way to encourage technological development of teachers since this study had identified perceived ease of use, perceived usefulness, computer compatibility, job relevance, and attitude as pertinent factors in influencing the AUC.

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