

Know – How ICT among Student Teachers

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ABSTRACT

Information and Communication Technology (ICT) has become a part of every human's life. Proper usage of ICT devices helps for the growth of the society and in turn the country. Therefore it is in the hands of the group of people, the professionals, who are very intimate and lay a platform for such growth. This study is one of such kind with sample (n=160) consisting of professional students, i.e. student teachers in the field of Education and Physical Education. The findings of the study reveal that male students possess better ICT skills. Rural students were found to be competent than their urban counterparts in the use of ICT and family income and educational qualification of parents also had a significant influence on the ICT competence level of students.

General Terms

Information and Communication Technology, Student Teacher

Keywords

ICT, Student Teacher, ICT Competency, Education, Physical Education

1. INTRODUCTION

In this 21st century science and technology is considered as essential as our basic needs. We live in a knowledge era which requires accessing knowledge quickly and efficiently and this is possible through the tremendous development in the field of science and technology. The usage of information in various digital forms led to coin the new terminology ICT; Information and Communication Technology. It refers to the many forms of technology which makes it possible for people to send and receive information with others all over the world. The buzz word ICT is constrained not only to the use of computer or mobile or internet. But, it is a wide concept which includes devices like projectors of all types, cameras, mobiles, mass media etc., and the methods of processing, manipulating, storing and disseminating information. It is essential for the society to go along with the ICT revolution. But the applications of ICT gadgets differ from one domain to another domain of the society on the basis of their necessity.

The Hargittai et. al [1] studies have shown that the rate of IT diffusion is correlated to the general level of socio-economic development. A most recent finding is that ICT plays a vital role in advancing economic growth and reducing poverty. A survey of firms carried out in 56 developing countries finds that firms that use ICT grow faster, invest more, and are more productive and profitable than those that do not.

The UNESCO Bangkok [2] states the air around us today is literally full of thousands of pieces of data. ICT is the means by which we can transmit, detect, access and reply to this information. It includes such technologies as radio, television,

video, DVD, telephone (both fixed line and mobile phones), satellite systems, computer and network hardware and software; as well as the equipment and services associated with these technologies, such as videoconferencing, e-mail and blogs.

For every child the teacher is his/her first role model outside their home. Also, the teachers are considered to be the powerful force in knowledge transmission. They should be well versed in the use of ICT, since the technological changes influences the teaching functions of teachers. The role of teacher plays a major role in educating the students which in turn help the current and future society in terms of using and knowing the needs and advantages of the ICT gadgets.

Hence we felt that it is very important that the student teachers should be well versed in the use of ICT which ultimately will have more impact on their students they handle in future. So this study focuses on the competency among the teacher trainees towards the usage of computers, especially on the basic operations, office automation, internet and its services.

2. OBJECTIVE OF THE STUDY

The main purpose of this study was to investigate the competence of student teachers towards information and communication technology. Specifically, the present study examined the influence of gender, age, locale, family income and educational level of parents on student teachers' competence in the use of ICT.

3. HYPOTHESES

Based on these objectives the following null hypotheses were formulated:

1. There is no significant difference between the competence of male and female student teachers towards information and communication technology (ICT).
2. There is no significant difference between the competence of student teachers towards information and communication technology based on the variables age, locality, family income and educational qualification of parents.

4. SUPPORTIVE REVIEWS

Anandan and Thyagarajan [3] in their review share the study of Deshmukh [3, p. 3] after a survey of a group of students who utilized the online support recommended that online learning may be more effective by providing i) more expert counsellors who will respond quickly to student queries, ii) More detailed information on the website and iii) More support from the coordinators at the study centre. The study revealed that the distance learners of B.Ed. are having sound awareness towards ICTs. This shows that the ICTs are now dominating our private sphere as well as our social and

working environments. All the distance learners of B.Ed. understood that ICT is a powerful tool for classroom interaction and enrichment. The results show that B.Ed. students have a sound knowledge on all components of ICTs such as Internet, Multimedia CDROM and EDUSAT. This shows that ICTs have a potentiality to enhance richness and quality of teacher education in the classroom and distribute own developed multimedia resources to others through distributed learning as well as flexible learning.

Studies of Schaumburg [4] show that females tend to be less interested in computer and use them less often in their spare time. In addition, girls are found to be less confident than boys in their computer skills, and that boys scored better than girls in computer related knowledge and skills in vast majority of countries.

Derbyshire [5] found that the three computer related occupation (computer scientists, computer engineers and system analysts, and computer science and engineering) are the top career choices for boys.

Yusuf and Balogun [6] in their study refer Sefyryn [6, p. 20] who showed that competence in ICT could be seen as a question of interest in ICT, where men are more interested in ICT than women.

Edmunds et al [7] studied on the ICT project brought by government known as Rural Info Center (MID). The MID was implemented in order to provide the rural community with ICT facilities and basic ICT trainings. The main objective of MID is to benefit the rural community from the computer and internet utilization in their daily activities. Indirectly, establishment of MID can raise the socio-economic standard of the rural population.

Arslan et al [8] conducted a study to determine the pre-service mathematics teachers' opinions about information and communication technologies. A questionnaire was applied to 104 mathematics teacher candidates from a university in the Black Sea Region as the data collecting tool. The data was analyzed with in terms of average mean, standard deviation and t-tests. Findings showed that mathematics teacher candidates have positive attitude towards applying ICT in classroom settings. Results showed no significant difference between the attitudes and owning a computer, using the internet and the department being studied; however there was a significant correlation between attitudes and gender; favoring males.

Rana [9] opines that ICT holds the key to the success of modernizing information services. The introduction of various information technology (ICT) trends has lead to reorganization, change in work patterns, and demand for new skills, job retraining and reclassification positions. Technological advancement of the past twenty five years, such as the electronic database, online services, CD-ROMs and introduction of internet has radically transformed access to information.

According to a research by Van Rooy [10], in a review of the role of ICT in schools, Wellington [10, p. 66] provides evidence to indicate that ICT adds value to learning by reaching parts of the curriculum that other teaching methods do not.

Watson [11] refers Weert [11, p. 205] explores the forms of education that might emerge to serve a knowledge society in which ICT is omnipresent and ubiquitous. He uses the notion of affordances, activity and transformation as means to

explain and explore how teachers may negotiate organizational barriers.

The study of Samah et al [12] shows more emphasize is given by the Technology Acceptance Model (TAM) on the factors that can influence usage of technology, namely attitude, perceive usefulness perceive ease. In this study, perceived usefulness is defined to the extent to believe that ICT usage would be useful. Davis et al. [12, p.114] defined perceived usefulness as the degree to which a person believes that using a particular information systems would enhance his or her job performance.

World Telecommunication Development Report [13] explored that inadequate pool of skilled teachers, adapting curricula to meet the need of the information society is arguably unattainable in schools and colleges. Success in implementing and leveraging ICT in education in the conventional classroom setting is heavily dependent on teachers. It is important to develop ICT – skills among the teaching force, so that the knowledge can be passed down to students.

Ogbomo [14] refers to the statement of Annan [14, p. 1] in which the information society is a way for human capacity to be expanded, built up, nourished, and liberated by giving people access to tools and technologies, with the education and training to use them effectively. Respondents use ICTs for capacity building, improvement of teaching conditions, job creation, increased income, improvement of agricultural production, greater involvement in community matters, better use of information, improvements in contact with relatives and friends, and time saving.

5. METHODOLOGY

The study was conducted on 160 students randomly selected from two different institutions namely, Avinashilingam Institute of Home Science and Higher Education for Women and Sri Ramakrishna Mission Vidhyalaya Vivekananda University, Coimbatore. The sample included 37 students of Bachelor of Education and 113 students pursuing their graduation in Physical Education.

5.1 Instrument

The method used for the study was survey and the instrument used for the study was developed by Yusuf and Balogun [6]. The instrument focused on level of competence of students in the use of ICT, specifically, basic ICT competence. There were 35 items and the response modes were: "I am an expert in this application/operation" (coded 4); "I am a regular and confident user of this application" (coded 3); "I have used this occasionally" (coded 2); "I do not use" (coded 1); and "I am not aware of this application/operation" (coded 0). The 35 items included were related to aspects like Basic Computer Operation and Issues, Use of Application Software, Use of the Internet Resources and Use of Peripheral ICT Equipment. The reliability coefficients obtained is 0.81 for competence scale.

5.2 Procedure

The self report rating scale was administered to the students by the investigators and data were collected and scored. The scores obtained were further subjected to statistical analysis. Descriptive analysis (percentages and means) were done to present the details about the competence of students in the use of ICT. Furthermore, t-test and one way ANOVA were used to test the hypotheses generated in the study.

6. RESULTS AND DISCUSSION

6.1 Demographic Information

Table 1. Demographic Details

Dependent Variables	Sub Samples	N	%
Gender	Male	60	37.5
	Female	100	62.5
Locality	Rural	106	66.25
	Urban	54	33.75
Age	Up to 20 years	80	50
	21 and above	80	50
Income	< ₹ 2100	8	5
	₹ 2101- 4500	34	21.25
	₹ 4501-7500	27	16.88
	₹ 7501 and above	91	56.88
Educational Qualification of Father	Illiterate	20	12.5
	Below 8 th standard	47	29.38
	SSLC	41	25.63
	Higher secondary	31	19.38
	Graduation and above	14	8.75
Educational Qualification of Mother	Illiterate	43	26.88
	Below 8 th standard	58	36.25
	SSLC	35	21.88
	Higher secondary	12	7.5
	Graduation and above	9	5.63

6.2 Competency Level of Students

The scores obtained were used for comparing the competency level of the students. The maximum value that could be scored by the students is 140 and minimum is 0. It was found that the students whose scores are above or equal to 71 were classified into above average category using the mean and standard deviation values and scores from 67 to 72 as average and whose scores were below or equal to 66 as students with below average competence in the use of ICT. The results obtained are presented in Table 2.

Table 2. ICT Competence Level of Students

Competency Level	N	%
Above average (≥ 71)	64	40
Average (72-67)	5	3
Below average (≤ 66)	91	57

It was found that (57%) fall under the below average category, which needs immediate attention in this ICT based world and 40 per cent of the students were above average in the use of ICT.

6.3 Comparison of Competence in the use of ICT based on gender

The competence in use of ICT was compared for male and female students using t-test and the results are given in Table.3

Table 3. Gender and Competence

Variable	Female (N1= 100)		Male (N2= 60)		t-value
	M1	SD1	M2	SD2	
Competency	65.43	23.32	73.85	27.27	2.073*

* Significant at 0.05 level

From the above table, it is seen that there is a significant difference in the competence in the use of ICT by male and female students. The mean value indicates that male students are competent than female students in the use of ICT, hence the null hypothesis is rejected in terms of competence.

6.4 Comparison of Competence in ICT use based on Locality

An attempt was made to see if there is any significant difference in the competence of rural and urban students in the use of ICT and the results obtained are presented in Table 4.

Table 4. Competence in ICT use based on Locality

Variable	Rural (N1= 106)		Urban (N2= 54)		t-value
	M1	SD1	M2	SD2	
Competency	71.75	26.07	62.21	21.99	2.29*

* Significant at 0.05 level.

The above result shows that students from rural area are competent in the use of ICT than their urban counterparts and hence the hypothesis that “there is no significant difference in the competence of students based on locality” is rejected.

6.5 Competence of students towards ICT based on Age

The students were divided into two groups as students whose age level is equal to or less than 20 and the second group consisted of students with age 21 and above and the t-test results obtained are presented in Table 5.

Table 5. Competency in use of ICT based on Age

Variable	Age ≤ 20		Age ≥ 21		t-value
	M1	SD1	M2	SD2	
Competency	67.96	22.98	69.21	27.23	0.314

The results indicated that there is no significant difference in the competence of students towards ICT based on their chronological age. Hence the null hypothesis that “there is no significant difference in the competence based on age” is accepted.

6.6 Competence in ICT use of students based on Family Income

One way ANOVA was carried out to see if there is any significant difference in the Competency of students in ICT use based on their family income. Students were categorized into four groups based on their family's monthly income as less than ₹ 2100, ₹ 2101-4500, ₹ 4501-7500, ₹ 7501 and above and the results obtained are given in Table 6.

Table 6. Competence in ICT use of students based on family Income

Variable	Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F
Competency	BG	5315.72	3	1771.91	2.908*
	WG	95061.05	156	609.37	
	Total	100376.78	159		

* Significant at 0.05 level

BG-Between groups WG-Within groups

6.7 Competence in ICT use of students based on Father's Educational Qualification

Table 7 gives us an idea of difference in competency of students in ICT use based on their father's educational qualification. Students were grouped into five based on their father's educational qualification as Illiterate, below 8th standard, SSLC, Higher secondary and Graduation and above.

Table 7. Competence in ICT use of students based on Educational Qualification of Father

Variable	Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F
Competency	BG	10312.71	4	2578.18	4.437**
	WG	90064.06	155	581.06	
	Total	100376.78	159		

** Significant at 0.01 level

BG-Between groups WG-Within groups

The F-value indicates that there is a highly significant difference in the competence in ICT use of students based on father's educational qualification.

6.8 Competence in ICT use of students based on Mother's Educational Qualification

Students were divided into five groups based on their mother's educational qualification as Illiterate, below 8th standard, SSLC, higher secondary and graduation and above and F-test was administrated and the result obtained is given in Table 8.

Table 8. Competence in ICT use of students based on Educational Qualification of Mother

Variable	Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F
Competency	BG	12975.41	4	3243.87	5.753**
	WG	87401.29	155	563.88	
	Total	100376.78	159		

** Significant at 0.01 level

BG-Between groups WG-Within groups

The F-value indicates that there is a highly significant difference in the Competence in ICT use of students based on mother's educational qualification.

7. LIMITATIONS OF THE STUDY

A self-report questionnaire was used to gather data. The overall approach would have been strengthened by the use of classroom observation and interviews. Observation would have been relevant in gathering data on student-teachers ICT skills and actual use of ICT. Furthermore the study was conducted only on 160 students and that too from two institutions only.

8. CONCLUSION

It was discovered in this study that majority of the students possess below average competence in ICT skills. One of the problems facing the development of ICT in educational institutions include the fact that there is limited infrastructural facilities, difficulties in infusing Internet use into the curriculum and also lack of appropriate teacher development. It is very important that these problems are addressed since it is the students who are going to determine the country's destiny in future. Also, provisions should be made for lecturers to be able to integrate ICT-based methodology into their lectures, and also, all classrooms should be equipped with necessary infrastructure and, lastly, all students should be provided with access to technology labs whenever they want to.

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