

Student-Teachers' Competence And Attitude Towards ICT

Dr. Gavisiddappa R. Angadi

Assistant Professor, BLDEA's JSS College of Education and P.G. Dept. of Studies in Education,
Bijapur-586101 Karnataka, India.

Abstract

This study examined empirically student-teachers' competence and attitude towards information and communication technology. Gender influence on their competence and attitude were also examined. Participants were 185 student-teachers (95 male and 90 female) from the College of Education (B.Ed), Rani Channamma University, Belagavi of Karnataka (India). The data collected through a questionnaire were analysed using percentage, mean, and chi-square statistical technique. Findings revealed that majority of the student-teachers have positive attitude towards the use of ICT. Overall, no significant difference was established between male and female student-teachers' attitudes in the use of ICT. The implication is that the student-teachers lacked the necessary competence in the full integration of ICT in the curriculum. This shows the need to improve the ICT content and to recruit qualified and competent teacher educator in ICT in the teacher education program.

KEYWORDS: Student-teachers, Competence, Attitude and ICT.

Introduction

Information and communications technologies are computer based tools used by people to work with information and communication processing needs of an organization. Its purview covers computer hardware and software, the network, and other digital devices like video, audio, digi-cam, and so on, which convert information (text, sound, motion, graphics, animation etc.) into digital form. Successful integration of ICT in the school system depends largely on the competence and on the attitude of teachers towards the role of modern technologies in teaching and learning. Thus, experienced teachers, newly qualified, competent and positive attitude towards ICT, and student-teachers need to be confident in using ICT effectively in their teaching.

Pre-service teacher education should focus on the need for student-teachers to have ICT skills for their own use in the preparation of materials for teaching and learning activities; the need to facilitate the direct use of ICT in students' learning activities within the classroom situation; and the need for teachers to develop in their students a critical awareness of ICT applications and the social implications. Most of the pre-service teachers are not equipped with basic computer operational skills; therefore, for teachers to be able to integrate ICT into the school curriculum, groundwork must be done at the pre-service teacher education level. Teacher educators need to understand the dimensions of pre-service teacher attitude as a means of developing teacher education curriculum relevant for the contemporary knowledge age. The purpose of this study was to investigate the competence and attitude of student teachers towards information and communication technology.

Objectives of the study

1. To know the attitude of student-teachers towards the use of ICT.

2. To know the competence of student-teachers in the use of ICT.
3. To study is there any difference between the attitude of male and that of female student-teachers towards information and communication technology (ICT).
4. To study is there any differences in competence in the use of information and communication technology (ICT) between male and female student-teachers'

Hypothesis

- 1 There is no significant difference between the attitude of male and that of female student- teachers towards information and communication technology (ICT).
- 2 There is no significant difference between the competence of male and that of female student-teachers in the use of information and communication technology (ICT).

Methodology

Population

The population under investigation included students who are student-teachers in the College of Education (B.Ed), at Rani Channamma University, Belagavi of Karnataka (India).

Sample

The participants were 185 student-teachers randomly sampled from the ten colleges of education (B.Ed) of Rani Channamma University, Belagavi of Karnataka, India. The student-teachers were stratified into male and female.

Tool

The data collecting tool used for this research was developed by the researchers. The tool that is questionnaire contained three sections. Section-A, focused on demographic information of student-teachers: stream and gender. Section-B, focused on student-teachers' attitude towards Information and Communication Technology (ICT), this section contained 14 items and the Likert response mode of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) were used, While Section-C, was designed to know the level of competence of student-teachers in the use of ICT, specifically, basic ICT competence and not the educational ICT competence. The section contained 11 items and the response mode were: "I am fully competent with this application/operation" (FC coded 4); "I am a regular and confident user of this application" (RCU coded 3); "I have used this occasionally but need further training" (OU coded 2); "I do not use" (DU coded 1); and "I am not aware of this application/operation" (NA coded 0).

To test the instrument's validity and reliability, the initial draft was administered on 50 student-teachers drawn from the B.Ed. College in Bijapur city of Karnataka. The feedback obtained from this first administration was used to revise the final instrument. The final instrument was tested for reliability using test-retest method of three weeks interval. The reliability coefficients obtained for the two sections of the instruments were 0.74 (attitude) and 0.85 (competence).

Data Collection

The Investigator visited the colleges personally two hundred copies of the questionnaire were distributed to randomly selected student-teachers. The questionnaire was administered on the sample during the entry into second semester of the academic year 2010-11. One hundred ninety one copies were returned, out of which six were discarded due to incomplete data, thus 185 were found usable, at a return and usable rate of 92.5%.

Statistical Technique

The responses for the respondents were tabulated and compared, and descriptive analyses were done to present the details about the attitude and

competence of student-teachers in the use of ICT. Furthermore, Chi-square statistics was used to test the two hypotheses generated in the study.

Results

The demographic information of the participants is given in Table 1.

Table: 1. Demographic Information of Participants.

Variable		N	%
Gender	Male	95	51.35
	Female	90	48.64
Stream	Science	92	49.73
	Arts	93	50.27

The above table 1 indicates that 51.35% were male students while female students were 48.64%, this shows that both male and female students were fairly represented. With regard to faculty representation the table shows that Arts has 50.27% and Science has 49.73% of respondents respectively.

Table: 2. The attitude of student-teachers towards the use of ICT.

Sl. No.	Statements	SA (%)	A (%)	D (%)	SD (%)
1	ICT enhances students' learning.	111(60.00)	69(37.29)	3(1.62)	2(1.08)
2	Teacher education should include ICT.	103(55.67)	75(40.54)	4(2.16)	3(1.62)
3	Mail creates more information between teachers and learners.	94(50.81)	72(38.91)	12(6.48)	7(3.78)
4	ICT provides better learning experiences.	121(65.40)	58(31.35)	4(2.16)	2(1.08)
5	I would work harder if I could use ICT.	87(47.02)	89(48.10)	4(2.16)	5(2.70)
6	I learn more from ICT than I do from books.	99(53.51)	63(34.05)	15(8.10)	8(4.32)
7	ICT is useful in dissemination of information.	107(57.83)	73(39.45)	3(1.62)	2(1.08)
8	ICT makes course more interesting.	98(52.97)	84(45.40)	2(1.08)	1(0.54)
9	ICT skill is worthwhile.	93(50.27)	89(48.10)	2(1.08)	1(0.54)
10	ICT gives opportunity to learn more.	114(61.62)	66(35.67)	3(1.62)	2(1.08)
11	I won't have anything to do with ICT.	5(2.70)	7(3.78)	64(34.59)	109(58.91)
12	I have phobia for ICT equipment.	3(1.62)	5(2.70)	112(60.54)	65(35.13)
13	ICT can't address the needs of school system.	4(2.16)	6(3.24)	94(50.81)	81(43.78)
14	The present state of facilities discourages me from using ICT.	12(6.48)	9(4.86)	78(42.16)	86(46.48)

The table 2 shows that there is every indication that response to the positive statements (items 1-10) shows that more than 60% of respondents have a positive attitude towards ICT. It is seen that more respondents believe that ICT could generally provide better learning experience. However, for negative statements (items 11 – 14)

shows that overall only about 6.89% of the respondents agreed or strongly agreed that they won't have anything to do with ICT, while remaining 93.10% disagreed and strongly disagreed on that statement. As seen from the analysis in Table 2, student-teachers generally have positive attitude towards ICT.

The results in Table 3 depicts the student-teachers' competence in computer basic operation and understanding of ICT based issues.

Table: 3. The competence of student-teachers in the use of ICT.

Sl.No.	Statements	FC	RCU	OU	DU	NA
1	I can locate and run an application program e.g. MS Office.	56 (30.27%)	62 (33.51%)	28 (15.13%)	18 (9.72%)	21 (11.35%)
2	I can search for files on computer system.	52 (28.10%)	63 (34.05%)	30 (16.21%)	21 (11.35%)	19 (10.27%)
3	I can create a basic presentation package.	39 (21.08%)	47 (25.40%)	65 (35.13%)	16 (8.64%)	18 (9.72%)
4	I can introduce animation into slides.	37 (20.00%)	43 (23.24%)	67 (36.21%)	17 (9.18%)	21 (11.35%)
5	I can access an Internet site via its website address.	41 (22.16%)	46 (24.86%)	52 (28.10%)	21 (11.35%)	25 (13.54%)
6	I can send and receive e-mail messages.	46 (24.86%)	49 (26.48%)	53 (28.64%)	18 (9.72%)	19 (10.27%)
7	I can use web search engines (Google, yahoo, AltaVista, etc) very well.	39 (21.08%)	45 (24.32%)	51 (27.56%)	24 (12.97%)	26 (14.05%)
8	I can download files from the Internet.	44 (23.78%)	45 (24.32%)	49 (26.48%)	23 (12.43%)	24 (12.97%)
9	I can save text and images from web pages.	39 (21.08%)	51 (27.56%)	49 (26.48%)	25 (13.51%)	21 (11.35%)
10	I can use a digital camera to capture images.	29 (15.67%)	57 (30.81%)	72 (38.91%)	15 (8.10%)	12 (6.48%)
11	I can use a scanner to copy images.	16 (8.64%)	43 (23.24%)	56 (30.27%)	39 (21.08%)	31 (16.75%)

Most of the respondents indicated that they are competent on most of the items. For items 1, 2, 3, 5, 6, 7, 8, 9 and 10, over 45% are fully competent and or are regular and confident user of these applications. For items 4, over 40% are fully competent and or are regular and confident user of these applications. However, for item 11 on use of scanner 31.88 percent of the respondents are fully competent or a regular and confident user. It can also be observed that between 15 to 38% of the

respondents noted that they had occasionally used these applications but need further training.

Hypothesis Testing

Hypotheses 1: There is no significant difference between the attitude of male and that of female student-teachers towards information and communication technology.

The results of the chi-square analysis for the 14 items on attitude are as reflected in Table 4. **Table: 4. Chi-Square Analysis on Male and Female Student-Teachers' Attitude towards ICT.**

Sl. No.	Statements	Mean Values		Chi-Square	df	LOS 0.05
		Male	Female			
1	ICT enhances students' learning.	3.78	3.71	3.08	3	0.37
2	Teacher education should include ICT.	3.63	3.59	3.34	3	0.35
3	Mail creates more information between teachers and learners.	3.39	3.41	5.56	3	0.15
4	ICT provides better learning experiences.	3.25	3.29	2.57	3	0.46
5	I would work harder if I could use ICT.	3.68	3.74	3.10	3	0.36
6	I learn more from ICT than I do from books.	3.12	3.22	0.54	3	0.81
7	ICT is useful in dissemination of information.	3.70	3.56	3.47	3	0.32
8	ICT makes course more interesting.	3.14	3.15	0.27	3	0.98
9	ICT skill is worthwhile.	3.25	3.21	3.05	3	0.38
10	ICT gives opportunity to learn more.	3.45	3.36	3.98	3	0.27
11	I won't have anything to do with ICT.	1.82	1.78	0.51	3	0.89
12	I have phobia for ICT equipment.	2.01	2.10	0.62	3	0.92
13	ICT can't address the needs of school system.	2.33	2.47	6.32	3	0.19
14	The present state of facilities discourages me from using ICT.	2.28	2.21	0.55	3	0.92

From the above table 4, it shows that there is no significant difference in the attitude of male and that of female student-teachers' towards ICT as can be observed from the results on all the items. The chi-square analysis shows that there is no significant difference between the attitude of male and that of female student-teachers' toward ICT, therefore, the null hypotheses is accepted.

Hypotheses 2: There is no significant difference in the competence of male and that of female student-teachers' in the use of information and communication technology (ICT).

Table: 5. Chi-square analysis of male and female student-teachers competence in the use of ICT.

Sl. No.	Statements	Mean Values		Chi-Square	df	LOS 0.05
		Male	Female			
1	I can locate and run an application program e.g. MS Office.	2.95	2.86	2.24	4	0.09*
2	I can search for files on computer system.	2.98	2.96	1.67	4	0.08*
3	I can create a basic presentation package.	2.56	2.11	12.32	4	0.04*
4	I can introduce animation into slides.	2.59	2.32	10.01	4	0.03*
5	I can access an Internet site via its website address.	2.98	2.87	5.11	4	0.06*
6	I can send and receive e-mail messages.	2.51	2.12	12.58	4	0.01*
7	I can use web search engines (Google, yahoo, AltaVista, etc) very well.	2.55	2.31	11.02	4	0.04*
8	I can download files from the Internet.	2.94	2.63	7.82	4	0.02*
9	I can save text and images from web pages.	2.62	2.23	18.56	4	0.00*
10	I can use a digital camera to capture images.	2.79	2.48	13.42	4	0.02*
11	I can use a scanner to copy images.	2.98	2.78	5.27	4	0.06*

*Significant at 0.05 level.

From the results in table 5 significance differences were established in all the items (1 to 11) in favour of male student-teachers who had higher mean values than the female student-teachers. However, significant difference was established between the competence of male and that of female in all the eleven items.

Thus, the null hypotheses were rejected. Generally, it can be inferred that there is a significant difference was established between the competence of male and that of female student-teachers' in the use of information and communication technology (ICT).

Discussion

The potentials of information and communication technology (ICT) as an educational tool in teacher education had been well established by several studies. Results from the present study revealed that student-teachers at the colleges of education seem to have positive attitude. This positive attitude is an important indicator of willingness and first step in effective ICT integration in curriculum. This study also revealed no significant gender difference in their attitude towards ICT. Majority of student-teachers (over 55%) in the colleges of education are competent in the use of ICT tools, and also the use of peripheral ICT equipment. Generally, this study revealed that there is a significant difference between male and female student-teachers in their competence in the use of ICT. However, significant differences were established in six out of 11 items on ICT competence. In addition, male student-teacher had higher mean scores for almost all the items on basic ICT competence.

Conclusions

In this study, it was discovered that student-teachers have positive attitude towards the use of ICT. The results revealed that among the student-teachers indicated competency in general computer operation, downloading and using basic internet resources. However, the same students lacked required competence in the use of peripheral ICT equipment. The findings underscore the need to introduce student-teachers to more courses on ICT with needed hand on experiences so as to promote effective integration of ICT throughout the curriculum by student teachers. In addition, it brings to the force the need for teacher educators to model good use of ICT in their instruction. Gender had no significant influence on the attitude of student-teachers towards ICT, and there is significant difference was established between male and female student-teachers in their ICT competence. One of the problems facing the development of ICT in schools include the fact that there is limited infrastructural facilities, difficulties in infusing Internet use into the curriculum and also lack of appropriate teacher development. 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.

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