A STUDY OF AWARENESS, ATTITUDE, COMPETENCY AND USE OF ICT IN TEACHING AND LEARNING BY SECONDARY SCHOOL TEACHER-TRAINEES OF KARNATAKA STATE OPEN UNIVERSITY

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ABSTRACT:

The future progress of man rests upon his ability to apply the achievement of science and technology. There is a necessity that the learners in schools and Schools are to be imparted the principles of science and technology so that they may contribute to their own progress. In this context, the teachers have to play a different role than their earlier roles.

KEYWORDS: *future progress of man , achievement of science and technology.*

1. INTRODUCTION

They should have clear understanding of the basis of their profession and command of the fact of science as well as the ability to encourage and inspire the learners who are working under their direction. This article reviews that the level Awareness, Attitude, Competency and use of ICT in Teaching and Learning by Secondary School Teacher-Trainees of Karnataka State Open University.

2. INFORMATION AND COMMUNICATION TECHNOLOGY IN DISTANCE EDUCATION:

Success of distance education depends largely on the efficient use of alternative media available to the institutions. 'Computer Technology' is similar to one face of coin (Information Technology). A tremendous revolution has taken place in the last two decades. The networks make possible a wide range of communication services in the university environment. There are several modem communication services which have relevance to distance education, such as Electronic mail, Tele Text, Facsimile, Transmission, Bulletin Board service, Video text. Voice Systems, Voice Message System, Teleconferencing, Audio conferencing, Audio graphics, Tele conferencing, Video conferencing etc. All the above services make use of special equipments, computer based message systems and computer networks. The special equipment include: Fax Machine, EP Bx, Automatic Telephone Dialler, Voice Recognition systems. Voice Synthesizers, Data Networks, Commercial Data bases, Optical Disk Storage and Retrieval Systems, Telex Terminals, Communicating word-processors. Slow-scan TV, High-Definition TVS, CD TVS, and so on. What is important is not just using these media, but properly organising them into a well defined instructional strategy, which is the essence of

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information and communication technology.

3. INFORMATION AND COMMUNICATION TECHNOLOGY AND TEACHERS:

A teacher is an important element in the education network. The concern for professional quality of teachers, their status and social credibility is very aptly summarised in the UNESCO Report 'Learning; The Treasure Within' which has presented a global view of thinking on education scenario that would be gradually unfolding itself in the 21st Century.

Improving the quality of education depends first on improving the recruitment, training, social status and the conditions of work of the teachers. They need appropriate knowledge and skills, personal characteristics, professional prospects and motivation if they are to meet the expectation placed upon them.

4. INTEGRATING INFORMATION AND COMMUNICATION TECHNOLOGY IN SECONDARY SCHOOL EDUCATION:

There are many emerging issues that necessitate integration of information and communication technology in education, such as, technological process, pedagogical, ethical and economical. The technological issues are in connection with the telephone network, power supply, machines, maintenance, technological support, networking, etc. The process issues focus on the drafter of policy driving force, programme formulation, time frame, resources and models of dissemination. The pedagogical issues emerge out of special needs, gender, language, curriculum, literacy, role of learner, teacher, law maker, local community, parents, intellectual property, public domain, propaganda, blasphemies, and pornography. There are economical issues emerging out of global domination and educational market.

5. SIGNIFICANCE OF THE STUDY:

In the present educational scenario, ICT is considered as an important tool in the entire educational system - curriculum, instruction, and management. Instruction no longer is conducted within the four walls of classroom. In the ICT era, learning takes place any time and anywhere. The academic community has to cope with this type of learning mode as brought out by ICT. The innumerable publication of articles in newspapers, journals and magazines and continuous debates in mass media as a result of globalization of education clearly underscore the importance of information and communication technology at all levels of education. Therefore, any attempt to study any aspect of ICT is termed to be fruitful and significant as the research may bring new ideas and facts about ICT and its application in education.

The present study is significant in the context of a series of "technology policies" initiated by the government of India. The Government of India has launched 'operation knowledge' as a part of information technology action plan, "under this plan, computers and internet facility shall be made available in every school .... college and university for providing the quality of education" (Maheswari, 1998).

The present study assumes greater significance in the light of the technology policy formulated by the government, to ensure optimum learning and quality education in the portals of College of Educations and Schools.

6. OBJECTIVES:

1. To find out level awareness, attitudes towards ICT, utilization and competencies of ICT of Teacher trainees.
2. To find out whether the Secondary Teacher-trainees differ in their awareness, attitudes towards ICT, utilization and competencies of ICT.

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7. HYPOTHESES:

1. $H_0 1$: There no significant difference between the Secondary Teacher-trainees studying in the Government/Aided and Private College of Educations in their ICT awareness, attitude, Competence and Utilization.

2. $H_0 2$: There no significant difference between the Secondary Teacher-trainees studying in the Co-education and Women's Colleges of Education in their ICT awareness, attitude, Competence and Utilization.

3. $H_0 3$: There no significant difference between the male and female Secondary Teacher-trainees studying in the Colleges of Education in their ICT awareness, attitude, Competence and Utilization.

4. $H_0 4$: There no significant difference between the Secondary Teacher-trainees studying in the Urban and Rural Colleges of Education in their ICT awareness, attitude, Competence and Utilization.

5. $H_0 5$: There no significant difference between the Science and Arts Secondary Teacher-trainees studying in the Colleges of Education in their ICT awareness, attitude, Competence and Utilization.

8. OPERATIONALIZATION OF VARIABLES:

The meaning of important terms used in the study is given below:

a) Information and Communication Technology:

Information and communication technology means the use of hardware and software for efficient management of information i.e. storage, retrieval, processing, communication, diffusion and sharing information for social and economic up liftmen.

b) College of Educations:

The Teacher Education of secondary level teachers are considered as College of Educations. In this study 30 such College of Educations teacher were selected as sample College of Educations.

c) Teacher-trainees:

The student teachers who are studying in the Colleges of Educations selected and conducting teaching, in-service and extension activities are designated as teacher trainees.

9. DESIGN OF THE STUDY:

a. Sample of the Study:

In the present study, 5 five study ce ntres were selected by means of simple random sampling technique. Thus 400 teacher-trainees from 5 five study centres of KSOU, Mysore formed the sample of the study.

b. Research Method:

In this study, survey method is considered as the appropriate method. The main purpose of selecting survey method is to study the information and communication technology in the School in Hyderabad Karnataka Region.

c. Research Tools:

The following research tools were developed and validated:
1. Information and Communication Technology Awareness Scale (ICTAS)
2. Information and Communication Technology Attitude Scale (ICTATS)
3. Information and Communication Technology Competence Scale (ICTCS)
4. Information and Communication Technology Utilization Scale (ICTDS)

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d. Application of Statistical Techniques:

Mean and standard deviation (SD) scores were computed, 't' test was used to find out the significance of difference between two means. In the case of more than two variables. 'F' test was employed,

10. ANALYSIS OF THE DATA:

a. Management of Institution:

The Secondary Teacher-trainees Trainees of the College of Educations are classified on the basis of the management of institution – Government Colleges of Education and Aided Colleges of Education. Then comparison is made between the two groups.

The Secondary Teacher-trainees studying in Government/ Aided and Private Colleges of Education are compared to find out whether they differ in the four aspects of information and communication technology by using 't' test. The results are tabulated below:

Table - 1: Significance of Difference between Secondary Teacher-trainees of Government/Aided and Private Colleges of Education in ICT Aspects
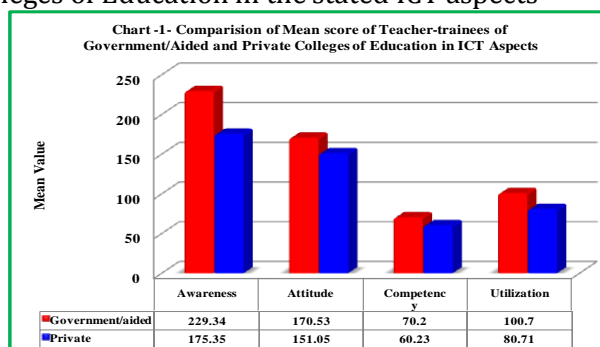
Sl. No	ICT Aspect	Government/aided		Private		't'	r-value
		M	SD	M	SD		
1	Awareness	229.34	12.687	175.35	13.742	66.232	0.874
2	Attitude	170.53	5.616	151.05	5.460	58.227	0.922
3	Competency	70.20	2.914	60.23	2.984	53.404	0.879
4	Utilization	100.70	5.469	80.71	5.941	59.427	0.855

* Significant at 0.05 level for two tailed test.

The following are the conclusions drawn from the table:

There exists significant difference between the Government/Aided and Private Secondary Teacher-trainees studying in the Colleges of Education in the stated ICT aspects. In all the cases, the calculated t-values are above the table value at 0.05 level of confidence. It is concluded that the Management of Institution is a variable in influencing on the teacher-trainees ICT awareness, their ICT attitude, their ICT Competency and their extent of ICT use. (Hypothesis H_01 was rejected and alternative hypothesis accepted)

There is positive co-relation between the Government/Aided and Private Secondary Teacher-trainees studying in the Colleges of Education in the stated ICT aspects

Chart -1- Comparision of Mean score of Teacher-trainees of Government/Aided and Private Colleges of Education in ICT Aspects

	Awareness	Attitude	Competency	Utilization
Government/aided	229.34	170.53	70.2	100.7
Private	175.35	151.05	60.23	80.71

b. Type of Colleges of Education:

The Colleges of Education are broadly classified into three categories - men's college, women's college and co-education college. Then the studying in the two types of Colleges of Education are compared.

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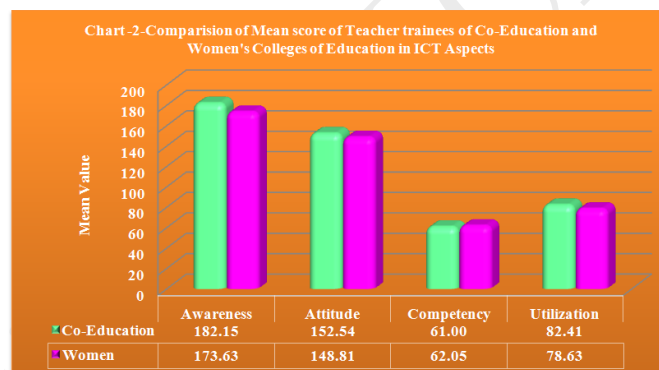Journal for all Subjects : www.lbp.world

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In order to find out whether the Secondary Teacher-trainees studying in co-education and Women's College of Educations differ in the five aspects of ICT, 't' test is applied. The calculated values are presented below in a tabular column:

Table-2: Significance of Difference between Secondary Teacher-trainees of Co-Education and Women's Colleges of Education in ICT Aspects

Sl. No	ICT Aspect	Co-Education		Women		't'	r-value
		M	SD	M	SD		
1	Awareness	182.15	43.013	173.63	43.015	7.623	0.932
2	Attitude	152.54	17.182	148.81	17.180	8.959	0.941
3	Competency	61.00	8.689	62.05	39.629	5.388	0.263
4	Utilization	82.41	17.238	78.63	17.588	9.342	0946

There exists significant difference between the women's and co-education Secondary Colleges of Education teacher Trainees in the stated ICT aspects. In all the cases, the calculated t-values are above the table value at 0.05 level of confidence. It is concluded that the Type of Colleges of Education is a variable influencing on the teacher-trainees ICT awareness, their ICT attitude, their ICT Competency and their extent of ICT use. (Hypothesis H_02 was rejected and respective alternative hypotheses accepted)

There is positive co-relation between the women's and co-education Secondary Teacher-trainees in the stated ICT aspects

Chart -2-Comparision of Mean score of Teacher trainees of Co-Education and Women's Colleges of Education in ICT Aspects

	Awareness	Attitude	Competency	Utilization
Co-Education	182.15	152.54	61.00	82.41
Women	173.63	148.81	62.05	78.63

c. Sex of Secondary Teacher-trainees :

The Secondary Teacher-trainees are classified on the basis of sex – male and female. Then comparison is made between the two groups.

**The Comparison between Male and Female Secondary Teacher-trainees in Colleges of Education:**

To study the significance of difference between the male and female Secondary Teacher-trainees in the Colleges of Education, 't' test is applied and the calculated values are presented below in a tabular column:

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Table-3: Significance of Difference between Male and Female Secondary Teacher-trainees in ICT Aspects

Sl. No	ICT Aspect	Male		Female		't'	r-value
		M	SD	M	SD		
1	Awareness	215.06	23.125	140.73	20.635	101.00	0.893
2	Attitude	165.54	8.572	135.81	8.929	123.90	0.926
3	Competency	70.45	38.300	52.59	4.393	6.54	0.005
4	Utilization	95.74	8.458	65.30	8.747	117.76	0.910

There exists significant difference between the male and female Secondary Teacher-trainees studying in the Colleges of Education in the stated ICT aspects. In all the cases, the calculated t-values are above the table value at 0.05 level of confidence. It is concluded that the sex of the Teacher is a variable in influencing their ICT awareness, their ICT attitude, their ICT Competency and their extent of ICT use. (Hypotheses $H_0 3$ was rejected and alternative hypothesis accepted)

There is positive co-relation between the male and female Secondary Teacher-trainees in the stated ICT aspects

Chart -3- Comparision of Mean score of Male and Female Teacher trainees of Colleges of Education in ICT Aspects
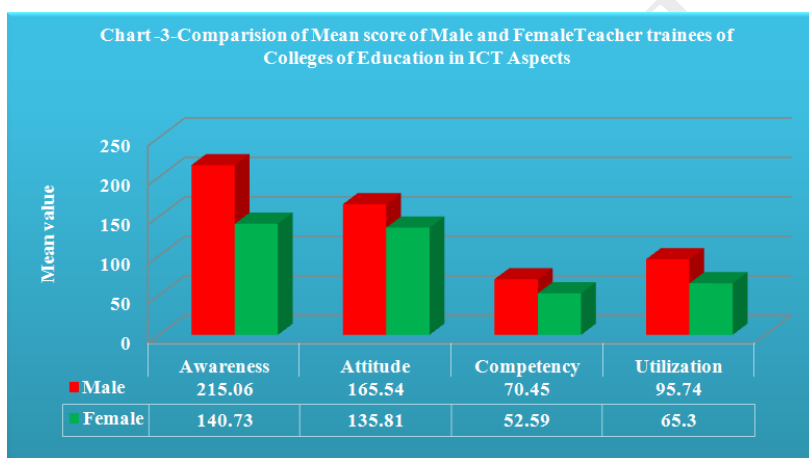
d. Locale of College:

The Colleges of Education are classified on the basis of their geographical location. Thus a classification of rural and urban College of Educations is arrived at. Then comparison is made.

Do the Secondary Teacher-trainees studying in rural and urban Colleges of Education differ In information and communication technology related aspects? The following table gives answer to the question.
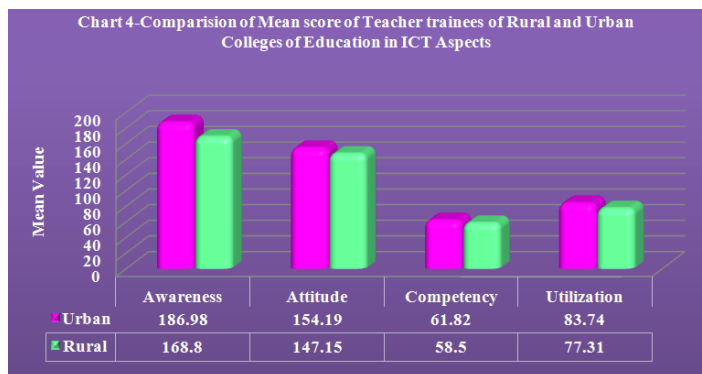
Table-4: Significance of Difference between Secondary Teacher-trainees studying in Rural and Urban Colleges of Education in ICT Aspects

Sl. No	ICT Aspect	Urban		Rural		't'	r-value
		M	SD	M	SD		
1	Awareness	186.98	41.991	168.80	42.516	17.306	0.938
2	Attitude	154.19	17.053	147.15	16.782	16.532	0.937
3	Competency	61.82	8.540	58.50	8.634	15.640	0.939
4	Utilization	83.74	17.304	77.31	17.131	15.564	0.942

The Secondary Teacher-trainees studying in the urban and rural Colleges of Education differs in all the ICT aspects stated in the table. It is found that all the calculated 't' values are not significant at 0.05 level of confidence. It is concluded that the geographical location of the Colleges of Education is not a variable in influencing the ICT related aspects namely, ICT awareness ICT attitude, internet utilization,

extent of internet utilization and Internet usage problems. (Hence Hypotheses $H_0 4$ was rejected and alternative hypothesis accepted)

There is positive co-relation between the urban and rural Secondary Teacher-trainees in the stated ICT aspects

Chart 4-Comparision of Mean score of Teacher trainees of Rural and Urban Colleges of Education in ICT Aspects

	Awareness	Attitude	Competency	Utilization
Urban	186.98	154.19	61.82	83.74
Rural	168.8	147.15	58.5	77.31

e. Faculty of Secondary Teacher-trainees:

The College of Educations are grouped under two groups - Arts, Science. Then the Secondary Teacher-trainees Trainees are compared for statistical significance.

Comparison between Arts teacher trainee and Science teacher trainee

't' test is applied to find out the significance of difference between the two groups in the four aspects of information and communication technology. The computed 't' values are tabulated below:

Table-5: Significance of Difference between Arts teacher trainee and Science teacher trainee in ICT Aspects

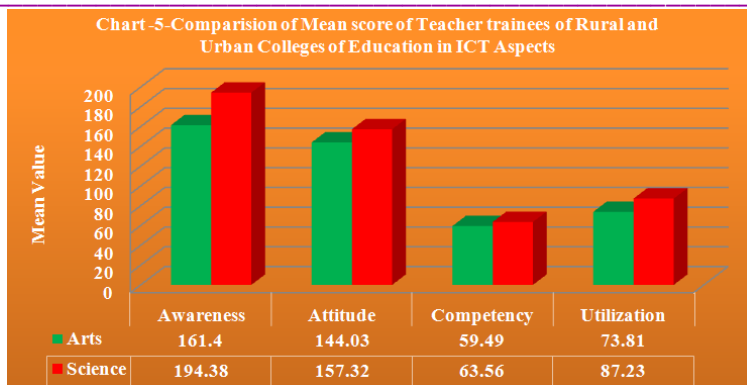| Sl. No	ICT Aspect	Arts		Science		't'	r-vale
		M	SD	M	SD		
1	Awareness	161.40	38.967	194.38	40.889	29.465	0.923
2	Attitude	144.03	16.010	157.32	15.884	28.858	0.917
3	Competency	59.49	39.677	63.56	7.995	01.498	0.254
4	Utilization	73.81	16.303	87.23	16.044	32.508	0.935

The Secondary Teacher-trainees belonging to arts and science subjects do not differ in the following ICT related aspects,
   a.   ICT awareness (T = 0.14)
   b.   ICT attitude (T = 0.35)
   c.   Competency of ICT (t=0.22)
   d.   Use of ICT (T = 0.08)
   e.   Competency ('t' = 0.08)

In all the cases, the calculated 't' values are far above the table value at 0.05 level and hence, difference between the two groups is observed.

It is concluded that subject discipline of the Secondary Teacher-trainees is not a variable in influencing the ICT aspects used in this study. (Hence Hypotheses $H_0 5$was rejected and alternative hypothesis accepted)

There is positive co-relation between the Arts and Science Secondary Teacher-trainees in the stated ICT aspects

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Chart -5-Comparision of Mean score of Teacher trainees of Rural and Urban Colleges of Education in ICT Aspects

	Awareness	Attitude	Competency	Utilization
Arts	161.4	144.03	59.49	73.81
Science	194.38	157.32	63.56	87.23

11. EDUCATIONAL IMPLICATIONS:

- The present study indicates the lesser utilization of ICT by the teacher-trainees. ICT plays a very crucial role in the teaching - learning process at higher education level.

- Teacher-trainees of College of Educations will acquire ICT literacy and experience of preparing lesson plans in multimedia, accessing off-line resources, document creation and of communication using e-mail etc.

- The present study reveals that teacher-trainees studying in the government colleges of education have more favourable attitude towards ICT than that of the teacher-trainees studying in the aided College of Educations.

- The teacher-trainees may be encouraged to contribute their share to ICT world by means of attending and participating in conferences, seminars and symposia.

- The authorities of the aided College of Educations should provide ICT device facilities in their institutions so as to enable the teacher-trainees make use of internet to a greater extent. The internet facilities available in the aided colleges of education may be provided to the student teachers during lunch interval and holidays. The aided college authorities should initiate measures in this direction.

- The study reveals that the women teacher-trainees have greater ICT awareness than that of the men teacher-trainees. But the men utilize the internet to a greater extent than their counterparts. The women teacher-trainees may be encouraged to make use of internet during evening times, by ignoring the unwanted societal norms.

12. CONCLUSION:

ICT plays a dominant role in the society and education system. ICT based instruction may lead to effectiveness and efficiency of education in general and Colleges of Education in particular. In India, the University Grants Commission and the National Council for Teacher Education have initiated appropriate measures for the creation of ICT infrastructure facilities. Sensitizing the relevance and importance of ICT in Colleges of education, an attempt is made to study the information and communication technology in College of Educations. For the present study, four aspects namely, ICT awareness, ICT attitude, ICT competence and ICT utilization by the teacher-trainees are identified and studied. The study reveals that i) the teacher-trainees have greater ICT awareness and more favourable attitude towards ICT; their utilization of ICT utilization are not encouraging; the teacher-trainees experience more problems while utilizing ICT; iii) the male teacher-trainees have greater ICT awareness and more favourable attitude towards ICT; their utilization of ICT are low; iv) the College of Educations differ among themselves in the four aspects of ICT.

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