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Original Article

Information and Communication Technology Literacy among the Higher Secondary Teachers in relation to their Type of Management and Stream: an Assessment

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ABSTRACT

We are living in the age of information and communication technology. We cannot afford to ignore the use of information and communication technology in managing the affairs of education. The use of information and communication technology has great potential in preparing the teachers for facing various challenges and responsibilities to be fulfilled by them as a teacher in their respective schools. Hence it is very essential that the teachers should be helped in equipping them with the required information and communication technology competencies for fulfilling their responsibilities and managing the affairs of the school. Needed information and communication technology competencies – desired knowledge, skills, attitudes and interests are summarized as: Competency in the use of personal computer, laptop and notebook, multimedia projector (LCD or DLP) to communicate with large group, personal computer/laptop with video card and web camera, digital video camera, digital libraries, computer database and data processing mechanism, CD-ROM and DVD, e-mail, fax, internet and world wide web (www),, interactive videotext, interactive video disk and interactive remote instruction, competency in making use of information and communication technology relevant to the modern age of e-learning, m-learning, distance learning, on-line education and virtual classrooms. The investigator has made an attempt to explore the ICT knoleledge of the college teachers of Odisha in the study.

***Key words**: ICT Literacy, Higher Secondary Teachers, Type of Management and Stream*

INTRODUCTION

Now the educational institutions are not confined to transmit the prescribed set of information from teacher to student over a fixed period of time. Rather, educational institutions must promote "Learning to Learn" i.e., the acquisition of knowledge and skills that make possible continuous learning over the lifetime. This approach indirectly indicates to provide high quality education and training to the people in an insufficient economic condition through the most cost effective way. The educational system has taken it as a challenge and made attempts to overcome it by integrating new approach i.e., Information and Communication Technologies (ICT) in education which include electronics media and newer digital technologies such as computers, Internet and other digital learning objects (DLO). ICT the most powerful tool for educational change and reformation, while used appropriately it can create active process of learning to connect the real life of all in the learning community.

The governments of Odisha have recently implemented Students Academic Management System (SAMS) and e-admission in higher secondary colleges (Junior Colleges) and Degree colleges' e-Governance is the application of Information and Communication Technology (ICT) for delivering Government Services, exchange of information, communication transactions, integration various stand-alone systems and services between Government and Citizens (G2C). Microsoft India has tied up with the government of Odisha to incorporate in MS-Windows and MS-Office to enable the citizens to use ICT based projects and Computerization of schools and colleges.

REVIEWS

Several studies argue that the use of new technologies in the classroom is essential for providing opportunities for students to learn to operate in an information age. It is evident as Yelland (2001) argued that traditional educational environments do not seem to be suitable for preparing learners to function or be productive in the workplaces of today's society. She claimed that organizations that do not incorporate the use of new technologies in schools cannot seriously claim to prepare

their students for life in the 21st century. This argument is supported by Grimus (2000), who pointed out that "by teaching ICT skills in primary schools the pupils are prepared to face future developments based on proper understanding. Similarly, Bransford et al. (2000) reported that what is now known about learning provides important guidelines for uses of technology that can help students and teachers develop the competencies needed for the twenty first century. Safahieh and Asemi (2010) assessed the level of computer literacy skills of librarians in University of Isfahan, Iran. The investigation revealed that majority of the librarians did not possess a good level of computer skills and even their long experience of computer use had not necessarily improved their level of computer literacy.

Maheshwari *et al* (2010) conducted a study on assessment of ICT literacy among high school students of Warangal District, Andhra Pradesh. It was found that the significant difference in the mean scores of ICT literacy among the rural and urban high school students. The ICT literacy of urban students (19.30) is significantly better than that of rural students. There was a significant difference the mean scores of ICT literacy among the boys and girls of high schools. The ICT literacy of boy students (19.06) was significantly better than that of girl students. There is a significant difference the mean score of ICT literacy among the students of Arts and Science. The ICT literacy of Science students was significantly better than Arts students. Choudhury and Sethi (2009) analyzed the computer literacy of library professionals in the university libraries of Orissa. The study showed that majority of the professionals were computer literates and majority of them opined that they should be provided orientation. Haneefa (2008) discussed the ICT training in special libraries in Kerala. The study revealed that majority of the special libraries in Kerala provided different types of training facilities to their staff and users. For all types of training methods, self-learning through reading manuals/documentation and in-house workshops were the most common training methods used for the use of electronic resources. Mahajan (1994) studies the effectiveness of computer instruction for teaching singular and plural at grade 2 and found CAI to be more effective than the traditional method. Shah & Aggarwal (1994) conducted a research study to evaluate teachers, attitude towards compute education as well as Computer Assisted Instruction (CAI). They found attitude positive in all the groups, though female teachers showed more positive attitude towards CAI.

After analyzing all the above reviews, it is found that the ICT literacy has not attained its level as required among the teachers, students and other professionals. Basing on these factual literatures, the investigator felt the necessity to conduct a study on the status of ICT literacy among the junior colleges teachers in Odisha

OBJECTIVES OF THE STUDY

i. To study the status of ICT literacy among the higher secondary teachers in relation to the management.
ii. To study the difference in ICT literacy among the higher secondary teachers in relation to stream.
iii. To study the variation of the ICT literacy among the higher secondary teachers on the basis on gender.
iv. To study the relation of locality responsible for the development of ICT awareness among the higher secondary teachers.

HYPOTHESES OF THE STUDY

H_{01} There does not exist any statistical difference in ICT literacy among higher Secondary teachers in relation to the management.

H_{02} Stream of study does not have any impact upon ICT literacy among higher secondary teachers

H_{03} There does not exist any significant difference in ICT literacy among higher secondary teacher on the basis of gender.

H_{04} Place of habitation does not have any impact upon the ICT literacy among higher secondary teachers.

DELIMITATIONS OF THE STUDY

- The present study was confined to 120 teachers only.
- The study was conducted on higher secondary teachers from Bhadrak and Balasore district of Odisha only.
- The present study was conducted only to assess the ICT literacy status and factors affected to it.

POPULATION AND SAMPLE

The sample of the present piece of study was higher Secondary Teachers from Bhadrak and Balasore district only of Odisha for the study. But due to the limitation of time the investigator has taken only two district of Odisha in which twenty institutions purposefully from which 120 teachers are selected randomly. Keeping in view this factors like management and stream were taken into account while selecting the sample as per below table.

Distribution of Sample

Name of the District	Management	Stream wise No. of Trs.	Total No. of Trs.
Bhadrak	Government College Teachers	Arts Stream 30, Science stream 30	120
Balasore	Private College Teachers	Arts Stream 30, Science stream 30	

TOOLS USED

To execute any type of research work data must be collected for collecting new and unknown data required for the study at any problem are may use various devices to collect new facts. The devices thus employed for collecting data are called tools. In the present study the investigator has used self developed ICT scale for the collection of the data. For developing the tool the investigator has selected the computer as the best way for preparing questions for the scale. For this purpose the investigator has developed on ICT scale covering 7 dimensions of computer that is Fundamental, DOS, MS-Word, MS-Excel, MS-PowerPoint, Access, Internet respectively. The test consists of 40 questionnaires to measure the internet and computer fundamentals knowledge of teachers.

DISCUSSION

After collection of data the investigator followed the scoring key as prepared during the time of preparation of tool. The data were analyzed and interpreted on the basis of the statistical results obtained. The main variables such as Management (Govt & Private colleges), Stream (Arts & Science) and the intra variable such as Gender (Male & Female) were analyzed. The details are presented below.

Management and Ict Literacy

The investigator collected the data on the ICT literacy from both Government and Private Higher Secondary Teachers to study the impact of management if any on the development of ICT knowledge. The data were analyzed and the statistical techniques were employed to find out the Mean, SD and't' value. The calculated values are presented in the Table-2 and interpretation has been done to study the impact of management on ICT literacy of the Higher Secondary Teachers.

Table-2: Significance Difference of ICT Literacy among Higher Secondary Teachers In relation to Management

Management	N	Mean	S.D	"t" Value	Remarks
Government Higher Secondary Teachers	60	31.25	7.79	3.59	Significant
Private Higher Secondary Teachers	60	25.9	8.56		

From the above table it was evident that mean and standard deviation of Govt. teachers were 31.25 and 7.79 respectively and mean and standard deviation of private teachers were 25.9 and 8.56 respectively.

The calculated't' value 3.59 is found to be significant as it is greater than the table value (1.98) at 0.05 level of significance with df=118 .Thus null hypothesis (HO1)was rejected and it was concluded that there was significant difference between Govt. and Private Higher secondary Teacher on ICT literacy.

ICT in relation to Stream of Study

The investigator has collected the data on the ICT literacy from both Arts and Science Higher Secondary Teachers to study the impact of stream if any on the development of ICT knowledge. The data were analyzed and the statistical techniques were employed to find out the Mean, SD and't' value. The calculated values are presented in the Table-3 and interpretation has been done to study the impact of stream on ICT literacy of the Higher Secondary Teachers.

From the table-3 it is evident that mean and standard deviation of Arts teachers are 26.17 and 8.95 and Science teachers are 31.5 and 7.28 respectively. The obtained' value is 3.57.The table value of't' for DF (N1 + N2 – 2) 118 is 1.98 at 0.05 level of significance. The computed value is much greater than the table 't' value. So it is significant at 0.05 level of significance. Thus the null hypothesis (HO2) is rejected and it concluded that there is significant difference between Arts and Science teachers at Higher Secondary stage related to ICT literacy.

Table-3: Significance Difference of ICT Literacy among Higher Secondary Teachers in relation to Stream

Category	N	Mean	SD	't' Value	Remarks
Arts Higher Secondary Teachers	60	26.17	8.95		
Science Higher Secondary Teachers	60	31.5	7.28	3.57	Significant
Govt. Higher Secondary Teachers (Arts Stream)	30	25.17	8.32	2.94	Significant
Govt. Higher Secondary Teachers (Science Stream)	30	31.5	8.39		
Private Higher Secondary Teachers (Arts Stream)	30	23.67	8.30	2.50	Significant
Private Higher Secondary Teachers (Science Stream)	30	29.00	8.32		

From the above table it was found that the Mean and Standard Deviation (SD) of Govt. Higher Secondary Teachers (Arts Stream) were 25.17 and 8.32 respectively and mean and SD of Govt. Higher Secondary Teachers (Science Stream) were 31.50 and 8.39 respectively. The obtained' value is 2.94 which is greater than the table value for df (N1+N2 – 2) 58 is 2.00 at 0.05 level of significance. Thus, the computed' value as found to be greater than the table value so, it was significant at 0.05 levels. With reference to the Table-3 the Null hypothesis HO2 was rejected and it was concluded that there was significant difference between Arts and Science teachers of Govt. higher secondary colleges in relation to ICT literacy. It was generalized that the Science higher secondary teacher were more ICT literate than the Arts higher secondary teacher of government colleges.

From the Table-3 it is evident that the Mean and SD of the Private Higher Secondary Teachers (Arts Stream) are 23.67 and 8.30 respectively. The Mean and the SD of Private Higher Secondary Teachers (Science Stream) are 29.00 and 8.32 respectively. The't' value is 2.50. The calculated 't'value is greater than the table value (2.00) for df 58 at 0.05 level of significance. Thus the calculated 't'value id more than the table value it is found to be significant and the Null hypothesis is rejected and it is concluded that there exist statistical significance difference in ICT literacy between Arts and Science higher secondary teachers.

From both the above analysis it is clear that Level of ICT literacy varies between the Science and Arts teachers in higher secondary level. It is also evident that the science higher secondary teachers are more ICT literate in comparison to Arts higher secondary teachers.

Gender and ICT Literacy

From the table-4 it is evident that Mean and Standard Deviation of male higher secondary teachers are 32.25 and 7.16 respectively and Mean and Standard Deviation of female higher secondary teachers are 26.59 and 7.70 respectively. The obtained' value is 4.19. And the Mean and SD of Arts

Higher Secondary Male Teachers 29.00 and 8.42 respectively. Science Higher Secondary Male Teachers also carry the Mean & SD as 27.16 and 7.90 with 't'value 1.87. The't 'value is also found as 1.92 in case of Female higher secondary teacher from Arts and Science steam. The interpretation is done on the basis of results as mentioned in the table-4.

Table-4: Difference in ICT Literacy among Higher Secondary Teachers in Relation to Gender

Category	N	Mean	SD	t-Ratio	Remarks
Total Male Higher Secondary Teachers	75	32.25	7.16	4.19	Significant
Total Female Higher Secondary Teachers	45	26.59	7.70		
Arts Higher Secondary Male Teachers	45	29.00	8.42	1.87	Not Significant
Science Higher Secondary Male Teachers	30	27.16	7.90		
Arts Female Higher Secondary Teachers	25	28.23	7.79	1.92	Not Significant
Science Female Higher Secondary Teachers	20	18.26	7.68		

The table value't' for DF (N1 + N2 – 2) 118 is 1.98 at 0.05 level of significance. The computed value (4.19) is much greater than the table value (1.98). So, it is significant 0.05 level of significance. Thus the null hypothesis (HO3) is rejected and it concluded that there is significant difference in the ICT literacy among higher secondary male and female teachers. From the above table it is also evident that the't' value (1.87) of Arts and Science Male higher secondary teachers is Not Significant at 0.05 level of significance as it is less than the table value (2.00) for df 73.. The same status is also found in case of Arts and Science female higher secondary teachers. The't 'value of the same is found to be Not Significant at 0.05 level of significance as it is less than the table value (2.02) for df 43.

From the above analysis it is very clear that the Male and female higher secondary teachers differ in the level of ICT literacy. The Male teachers are found to be more ICT literacy than female teachers in higher secondary colleges.

Place of Habitation and ICT Literacy

The investigator has collected the data on the ICT literacy from both Rural and Urban Higher Secondary Teachers to study the impact of Place of habitation if any on the development of ICT knowledge.

Table-5: Difference in ICT literacy among Higher Secondary Teachers of Urban and Rural area

Habitation	N	Mean	SD	't' value	Remarks
Urban Higher Secondary Teachers	50	29.6	7.50	2.23	Significant
Rural Higher Secondary Teachers	70	24.22	6.74		

From the above table it was evident that mean and SD of Urban teachers were 29.6 and 7.50 respectively and mean and SD of Rural teachers were 24.22 and 6.74 respectively. The computed' value was 2.23. The table value for DF (N1 + N2 – 2) 118 is 1.98 at 0.05 level of significance. The computed 't' value was significant at 0.05 level of significance. Hence, the null hypothesis (HO4) is rejected and it concluded that there is significant difference in the ICT literacy of urban and rural higher secondary teachers.

FINDINGS

- The Higher Secondary Teachers differ statistically on ICT literacy with regard to the management, means the Government teachers differ significantly in ICT literacy from Private teachers.
- From this study it was evident that steam of sdtudy like arts and science stream did not possess any impact role in ICT literacy. It indicated the teacher from arts and teachers from science stream had no difference in ICT literacy level.

- There was significant difference between Government Arts and Science teachers of Higher Secondary stage. There was also significant difference between private Arts and Science teachers of higher secondary stage.
- There was significant difference between male and female teachers of higher secondary stages.
- There was significant difference in ICT literacy among urban and rural higher secondary stage teachers.

CONCLUSION

It can be done with the help at some additional training programmes and using ICT software and hardware not only at school but also at home. The educational planners should give a thought to improve the ICT literacy among the teachers and students so that they can benefit from it. From the study it is clear the teacher working in the colleges are not ICT literate, teachers from both the streams need to be provided computer and internet knowledge to develop a positive awareness by increasing teaching learning hours, providing modern infrastructure, facilities and train staff to the educational institution.

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