

Original Research Article

<https://doi.org/10.20546/ijcmas.2021.1001.236>

Awareness, Access and Knowledge of Teachers and Students about Information and Communication Technologies (ICTs)

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ABSTRACT

Keywords

ICT, Education, Learning, Teaching, Technology

Article Info

Accepted:
12 December 2020
Available Online:
10 January 2021

ICT stands for Information and Communication Technologies these technologies comprises computer, telephone, internet, television, radio etc. In 21st century, use of ICTs becomes more prominent in all the sectors which include organizations, academics and education etc. ICTs have introduced new methods of teaching and conducting research. The integration of ICTs into educational classroom teaching has attained a new upsurge nowadays. It has the potential to boost information distribution, learning, teaching and educational services and makes them affordable and accessible anytime, anywhere. The present study on “Awareness, access and knowledge of teachers and students about information and communication technologies (ICTs)” was conducted in CCS HAU Hisar with a sample size of 100 teachers and 150 students. The data was collected on awareness, access and knowledge about selected ICT tools with the help of the questionnaire. Finding of the study showed that cent percent of the teachers and students were having awareness about Internet/ Web services, MS PowerPoint. Friends and relatives played major source of awareness (71.60%) about ICT tools for most of the respondents. All the teachers (100.00%) were having accessibility of official computer in the department, internet access in the university and internet access in the faculty/department followed by personal computer (desktop/laptop) (98.00%) and CD-ROM access in the university library (87.00%).Majority of the teachers (94.00%) and students (88.67) were having high knowledge of ICT tools. Hence, ICT is an important source of information for teachers and students. Access to different forms of information and communication technologies had increased the ability of teachers and students to carry out more informed research.

Introduction

The beginning of the twenty-first century has seen a number of technological developments which affect every aspect of our lives. The ever-growing Information and Communication Technologies (ICTs) can be seen in all realms of life, from the workplace

to the sports field, in schools and on a personal or social level.

ICT has become valuable source of modernization and improvement of proficiency for many sectors across the globe. In the education area, particularly, the use of ICT has become a critical part of the learning

process for university students. Universities that have fully adopted ICT have noted immense advancement in the application of ICT for the up gradation of learning methods, teaching, research, and development. The fast speed of technological change in education has made it challenging for Faculty of Education professors to keep up-to-date with the integration of Information and Communication Technology (ICT) into teaching. The role of ICTs as an instrument for progress and development has been widely recognized in this 'Global Information age' and it has been witnessed that people with all walk of life are being influenced by the IT sector directly or indirectly.

Globalization and innovations in technology have led to an increased use of ICTs in education. Teachers use several ICTs-internet, video, audio, graphics, text, images, etc to offer students live experience of learning. Uses of ICTs in education are widespread and growing worldwide. Appropriate use of ICTs can renovate the whole teaching- learning processes leading to paradigm shift in teaching methodology (Sharma *et al.*, 2011).

Keeping in mind the role of ICTs, the study was carried out with the following specific objectives include to study the awareness of ICT tools by the teachers and students. To study the access of ICT tools by the teachers and students. To study the knowledge and source of knowledge of ICT tools by the teachers and students

Thangaraja *et al.*, (2008) conducted a study on the utilization pattern of online journals by the students of Tamil Nadu Agricultural University (TNAU). The results showed that majority (95.00%) of the students were aware about the accessibility of online journals which are related to their respective subjects.

Isiaka and Abubakar (2008) reported that

most of the extensionists largely used e-mail, online chat, e-publications, file transfer protocol and the world wide web, all of the which they desired to learn more about.

According to Mishra (2008) more research and development in the ICT will not only help in the development and information area but will also assist people to get skill, knowledge etc.

Reddy (2008) conducted a study to present a solution to bridge the information gap by exploiting advances in information technology (IT). A framework was planned of cost effective agriculture knowledge to the farming community to improve the crop with expertise.

Zakaria *et al.*, (2010) conducted the research on use of web 2.0 technology by Malaysian students. The general opinion gathered about the integration of web 2.0 tools into learning was positive. Result indicated that students preferred using e mail to disseminate and share digital contents. Similarly it was also observed that for finding information related to education, students prefer to use search engines instead of asking colleagues or teachers.

Sharma and Hasan (2012) concluded that most of the respondents owned various communication media as mobile phone, internet, newspaper and magazine. Majority of respondents had knowledge about the various software uses in the computer like – MS Word, MS power – point and MS excel etc.

Adebayo (2012) concluded that information and communication technology (ICT) have significant impact in the administration of polytechnic in Ogun, State Nigeria. The impact were found to be relevant to senior academic & administration officers of polytechnics in ICT providing solutions to

specific problems of administration, ICT enhance qualitative and quantitative. ICT encourages competency of administrators in decision-making in the administration of polytechnic. It also guarantees effective administrative practices of human and material resources; ICT has capacity to handle equality of data for processing with fastest speed. Nakweya (2013) found that traditional ICTs viz., radio and television have also been reported to be used by farmers in accessing agriculture related information.

Woreta *et al.*, (2013) observed the knowledge and utilization of ICT among 1096 students. The result indicated that 33% of the students used a computer once a week and almost 41% once in a month. Nearly half of the students (47%) never used ICTs. In addition, the result showed that the majority of the students (51%) use ICTs for email or instant messaging only.

Verma and Dahiya (2015) reported no significant difference between student and faculty towards ICT knowledge. Male faculties were more conscious about ICTs as compared to boys' student. Female faculty won from girl's student in understanding of ICT knowledge.

James and Lakshminarayan (2018) found that three-fourth (75.00%) of the agriculture extension functionaries were having high and medium level of overall knowledge about ICT tools. A variation of 72.80 per cent was observed in the knowledge of agriculture extension functionaries about ICT tool.

Materials and Methods

Selection of the population

The study was conducted in the purposively selected Chaudhary Charan Singh Haryana Agricultural University, Hisar, Haryana. All

the colleges of university including I.C. College of Home Science, College of Basic Sciences, College of Agriculture and College of Agriculture Engineering & Technologies were selected for conducting research on the usage of ICTs by teachers and students.

Selection of students

The proportionate sample of 150 post graduate doing M.Sc, M.Tech, MBA and P.hd students was selected from all the colleges of CCS HAU, Hisar, Haryana. Simple random sampling technique was used for selection of the respondents.

Selection of the Teachers

The sample of 100 teachers was selected from all the colleges of Chaudhary Charan Singh Haryana Agricultural University, Hisar, Haryana. Simple random sampling technique was used for selection of the respondents. The teachers for the study were operationalized as a teacher engaged in teaching courses.

Selection of ICT tools- In this study a total of seven ICT tools were selected after relevant review of literature, getting suggestions and guidance of the experts. The ICT tools selected were

Internet/Web services
MS Word
MS Excel
MS Power Point
Mobile Technology
Digital transaction
Interactive Multimedia Compact Disc

Instruments for data collection

Keeping in view the objectives and the variables under study, questionnaire was prepared for both students and teachers separately and pre-tested on a non-sampled

respondents to find any ambiguity in the questions.

After pre-testing some modifications were made in the questionnaire by consulting experts and finalized questionnaire was used for data collection. The questionnaire contains both close and open ended types of questions.

Awareness

Awareness model has two fold natures, that is they include a representation of one’s existing state or behaviour matched to some standards.

This indicates that awareness consists of both an object of attention and an evaluate context in which that object is framed. Awareness about ICT tools was categorized as Yes/No

Awareness regarding the selected ICT tools- Here the awareness regarding the selected ICT tools was classified into following categories.

Category	Score
Yes	2
No	1

Sources of Awareness - The sources of awareness were classified under four categories.

Category	Scores
Radio	1
T.V.	2
Print Media	3
Friends/ Relatives	4
By the online course	5

Awareness about the facilities, available in the university library system

Facilities	Yes	No
Internet technology	2	1
WIFI	2	1

Digital library resources	2	1
Desktop	2	1
Radio frequency technology	2	1
Online public access catalogue	2	1
E-mail facilities	2	1
CD-ROM technology	2	1

Accessibility of ICT facilities by the teachers and students in the department

Facilities	Yes	No
Official computer in the department	2	1
Personal computer (desktop/laptop)	2	1
Internet access in university library	2	1
Internet access in faculty/department	2	1
CD-ROM access in university	2	1

Knowledge

Bloom *et al.*, (1969) defined knowledge as those behaviours and test conditions, which highlight the remembering either by recognition or by recall of ideas and materials on the same phenomenon.

Knowledge regarding ICT tools

Statements based on certain significant aspects of Information and Communication Technology Tools were framed and pre-tested on a non sampled respondents. Finally on the basis of the experience gained in pre testing, 35 statements were selected regarding 7 ICT tools. They were presented to the respondents with 5 possible answers for each tool and selecting the correct answer. A score of two was given to the right answer and one to the wrong answer. The possible obtainable scores

ranged between 70 and 35 respectively. Based on the total scores, the respondents were categorized into three categories namely low, medium and high.

Further, the total knowledge score of respondents for all the statements were calculated by summing up the number of statements answered and respondents were grouped into three categories following the equal distribution method based on class interval as follows:

Procedure for categorization was followed by Manjula (2000).

Maximum score - Minimum score = Class interval $70-35 = 11.66$ i.e. 12.00

Category	Range
Low	35-46
Medium	47-58
High	59-70

Sources of Knowledge- The sources of knowledge regarding ICT tools were categorized into following types.

Category	Score
Self	1
Home	2
Office	3
Through teaching	4
Through training	5
Through Summer/ Winter Camp	6
Cyber Café	7
Through friends/ Colleagues	8

Results and Discussion

Awareness of selected tools

It is clear from the Table-3 and Fig. 4.1 that cent per cent of the teacher were aware about

the Internet/ Web services, MS Word, MS Excel, MS PowerPoint and Mobile Technology. While, more number of the teacher were aware about Digital transaction (online payment) (98.00%) followed by Interactive Multimedia Compact Disc (IMCD) 90.00 per cent.

With respect to the students all of them (100.00%) had awareness about Internet/ Web services, MS PowerPoint and Mobile Technology. While, majority of the students were aware about MS Word (99.33%), MS Excel (98.67%), Digital Transaction (96.66%) and Interactive Multimedia Compact Disc (IMCD) 87.33 per cent.

Source of awareness of ICT tools

The data of Table-4 and Fig. 4.2 depicts the source of awareness of ICT tools by teachers and students. Majority of the teachers were getting information of ICT tools from friends or relatives (71.00%) followed by print media (63.00%), TV (42.00%), radio (28.00%), through the training (9.00%) and by the online course (6.00%). In case of students, highest source of information was also friends or relatives (71.33%) followed by print media (28.00%), TV (27.33%), radio (10.66%), through the training (3.33%) and by the online courses (1.33%).

Awareness about the facilities, available in the university library system by the teachers and students

The results from Table-5 shows that all of the teachers (100.00%) were aware of internet facility available in the university library system followed by E-mail facility (96.00%), desktop (95.00%), WIFI (94.00%), digital library resources (92.00%), online public access catalogue (78.00%), CD ROM (85.00%) and radio frequency technology (34.00%).

With regard to the students majority of the students (96.00%) were aware about desktop facility available in the university library system followed by internet facility and WIFI (92.00%), digital library resources (87.33%), online public access catalogue (79.33%), E-mail facility (76.66%) and CD ROM (66.66%).

Accessibility of ICT facilities by the teachers and students in the department

It becomes clearly evident from Table-6, that cent per cent (100.00%) teachers were having accessibility of official computer in the

department, internet access in the university and internet access in the faculty/department followed by personal computer (desktop/laptop) (98.00%) and CD-ROM access in the university library (87.00%).

With respect to the students majority of the students having accessibility of internet access in the university (96.00%) followed by the official computer in the department (94.00%), internet access to faculty/department (93.00%), personal computer and CD-ROM access in the university library (89.33%).

Table.1 Awareness of selected ICT tools by teachers and students

Sr. No	ICT tools	Teachers (n=100) F (%)	Students (n=150) F (%)	Total 'N' (250) F (%)
1.	Internet/ Web services	100(100.00)	150(100.00)	250(100.00)
2.	MS Word	100(100.00)	149(99.33)	249(99.60)
3.	MS Excel	100(100.00)	148(98.67)	248(99.20)
4.	MS PowerPoint	100(100.00)	150(100.00)	250(100.00)
5.	Mobile Technology	100(100.00)	150(100.00)	250(100.00)
6.	Digital transaction	98(98.00)	145(96.66)	243(97.20)
7.	Interactive Multimedia Compact Disc (IMCD)	90(90.00)	131(87.33)	221(88.40)

Table.2 Source of awareness of ICT tools by the teachers and students

Sr. No	Source	Teachers (n=100) F (%)	Students (n=150) F (%)	Total 'N' (250) F (%)
1.	Radio	28(28.00)	16(10.66)	44(17.60)
2.	TV	42(42.00)	41(27.33)	83(33.20)
3.	Print media	63(63.00)	42(28.00)	105(42.00)
4.	Friends/ Relatives	71(71.00)	107(71.33)	179(71.60)
5.	By the online courses	6(6.00)	2(1.33)	8(3.20)

Note: 1. Multiple responses are possible

Table.3 Awareness about the ICT facilities, available in the university library system to the teachers and students

Sr. No	ICT tools	Teachers (n=100) F (%)	Students (n=150) F (%)	Total 'N' (250) F (%)
1.	Internet technology	100(100.00)	138(92.00)	238(95.20)
2.	WIFI	94(94.00)	138((92.00)	232(92.80)
3.	Digital library resources	92(92.00)	131(87.33)	223(89.20)
4.	Desktop	95(95.00)	145(96.00)	240(96.00)
5.	Radio Frequency technology	34(34.00)	70(46.66)	104(41.60)
6.	Online Public Access Catalogue	78(78.00)	119(79.33)	197(78.80)
7.	E-mail facilities	96(96.00)	115(76.66)	211(84.40)
8.	CD-ROM technology	85(85.00)	100(66.66)	176(70.40)

Table.4 Accessibility of ICT facilities to the teachers and students in the department

Sr. No.	Infrastructure	Teachers (n=100) F (%)	Students (n=150) F (%)	Total 'N' (250) F (%)
1.	Official computer in the department	100(100.00)	141(94.00)	241(96.40)
2.	Personal computer (desktop/laptop)	98(98.00)	134(89.33)	232(92.80)
3.	Internet access in university	100(100.00)	144(96.00)	244(97.60)
4.	Internet access in the faculty/department	100(100.00)	140(93.33)	240(96.00)
5.	CD-ROM access in university library	87(87.00)	134(89.33)	221(88.40)

Table.5 Knowledge of ICT tools by teachers and students

Sr. No.	Knowledge categories (Score)	Teachers (n=100) F (%)	Students (n=150) F (%)	Total(N=250) F (%)
1.	Low(35-46)	-	1(0.67)	1(0.40)
2.	Medium(47-58)	6(6.00)	16(10.66)	22(8.80)
3.	High(59-70)	94(94.00)	133(88.67)	227(90.80)

Table.6 Source of knowledge of teachers regarding ICT tools N=100

Sr. No.	ICT Tools	Source of knowledge							
		Self (%)	Home (%)	Office/ Institution (%)	Through teaching (%)	Through training (%)	Through Summer/Winter Camp (%)	Cyber café (%)	Through Friends/ Colleagues(%)
1.	Internet/web services	47(47.00)	4(4.00)	11(11.00)	5(5.00)	18(18.00)	-	2(2.00)	16(16.00)
2.	MS Word	37(37.00)	16(16.00)	19(19.00)	9(9.00)	21(21.00)	1(1.00)	5(5.00)	16(16.00)
3.	MS Excel	36(36.00)	14(14.00)	22(22.00)	10(10.00)	25(25.00)	-	4(4.00)	15(15.00)
4.	MS PowerPoint	37(37.00)	11(11.00)	34(34.00)	9(9.00)	24(24.00)	1(1.00)	6(6.00)	17(17.00)
5.	Mobile Technology	48(48.00)	9(9.00)	19(19.00)	7(7.00)	18(18.00)	3(3.00)	8(8.00)	21(17.00)
6.	Digital transaction	45(45.00)	6(6.00)	21(21.00)	9(9.00)	19(19.00)	-	11(11.00)	25(25.00)
7.	Interactive Multimedia Compact Disc (IMCD)	32(32.00)	14(14.00)	20(20.00)	13(13.00)	18(18.00)	-	-	29(29.00)

Note: 1. Multiple responses are possible

Table.7 Source of knowledge of students regarding ICT tools N=150

Sr. No.	ICT Tools	Source of knowledge							
		Self F (%)	Home F (%)	Office/ Institution F (%)	Through teaching F (%)	Through training F (%)	Through Summer/ Winter Camp F (%)	Cyber café F (%)	Through Friends/ Colleagues F(%)
1.	Internet/web services	88(58.67)	26(17.33)	10(6.67)	12(8.00)	7(4.67)	-	-	27(18.00)
2.	MS Word	45(30.00)	25(16.67)	27(18.00)	25(16.67)	11(7.33)	-	-	30(20.00)
3.	MS Excel	40(26.67)	28(18.67)	35(23.33)	24(16.00)	14(9.33)	-	7(4.67)	27(18.00)
4.	MS PowerPoint	47(31.33)	22(14.67)	29(19.33)	25(16.67)	13(8.67)	-	-	28(18.67)
5.	Mobile Technology	88(58.67)	35(23.33)	9(6.00)	8(5.33)	5(3.33)	-	-	36(24.00)
6.	Digital transaction	79(52.66)	44(29.33)	8(5.33)	6(4.00)	6(4.00)	-	6(4.00)	43(28.67)
7.	Interactive Multimedia Compact Disc (IMCD)	40(26.67)	20(13.33)	19(12.67)	10(6.67)	11(7.33)	7(4.67)	5(3.33)	50(33.33)

Note: 1. Multiple responses are possible

Fig.1 Awareness of the selected ICT tools by teachers and students

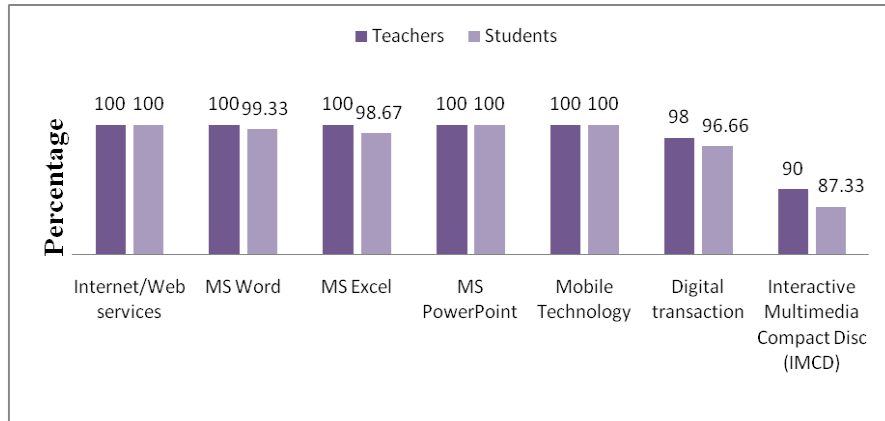


Fig.2 Source of awareness regarding ICT tools by the teachers and students

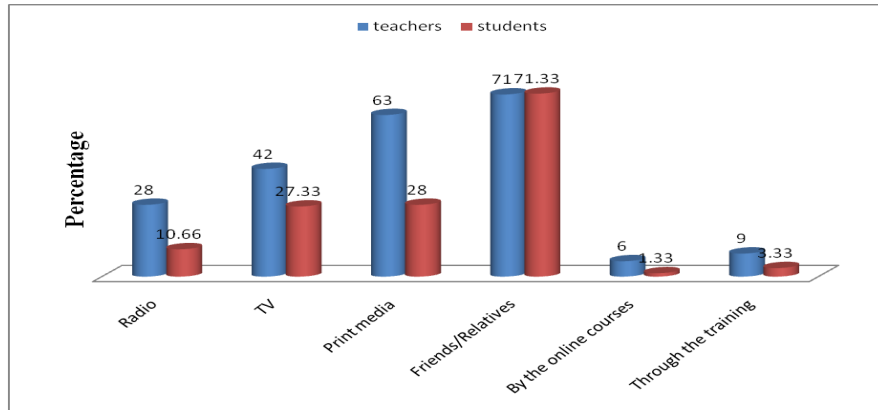
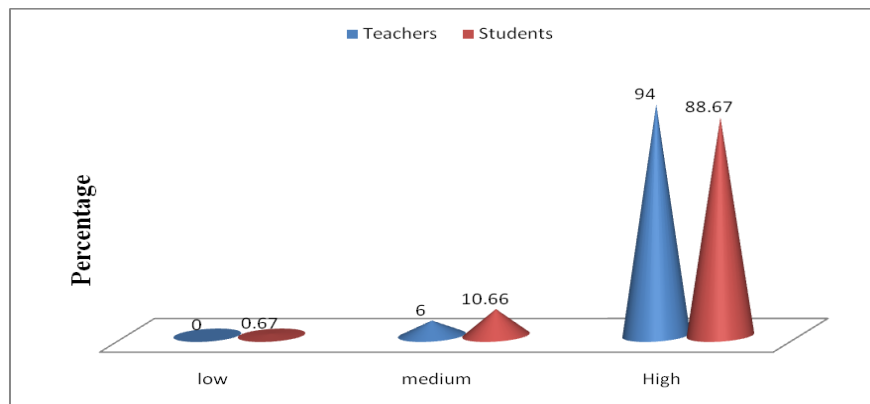


Fig.3 Knowledge level of teachers and students regarding ICT tools



Knowledge of ICT tools by teachers and students

The critical evaluation of results (Table-7) and Fig. 4.3 predicts that majority of the teachers and students (94.00%) and (88.67) were having high knowledge of ICT tools. Only few teachers (6.00) and students (10.66) were in the category of medium level knowledge (6.00%) and (10.66%) respectively. Only one student was found to have low knowledge of selected ICT tools.

Source of Knowledge regarding ICT tools

This part highlights the source of knowledge of teachers (Table-8 and 9) and students regarding seven selected ICT tools like Internet or Web services, MS Word, MS Excel etc. Eight sources like self, home, office, through teaching, through training, through summer or winter camp, cyber cafe and friends or colleagues were taken for the study.

Table-8 depicts that more number of teachers were getting knowledge regarding internet by their own efforts ((47.00%) followed by through training (18.00%), by the friends or colleagues (16.00%), office institution (11.00%), teaching (5.00%) and through home (4.00%). They procure more knowledge regarding MS Word also through self (37.00%) followed by through training (21.00%), office (19.00%), friends or colleagues and home (16.00%). With respect to the Digital transaction and Interactive Multimedia Compact Disc (IMCD) they were getting more knowledge by the self 45 per cent and 32 per cent respectively.

With respect to source of knowledge of ICT tools by students (Table-9), it was found that majority of them got knowledge regarding internet by their own efforts (58.67%) followed by through friends or colleagues

(18.00%), home (17.33%), through teaching (8.00%), office (6.67%) and through training (4.67%). They procure more knowledge about MS Word by the self (45.00%) followed by through friends or colleagues (20.00%) and office (18.00%). They got more knowledge about MS Excel by their own efforts (26.67%) followed by institution (23.33%). In case of Digital transaction and Interactive Multimedia Compact Disc (IMCD) they were getting more knowledge by their own efforts 52.66 per cent and 26.67 per cent respectively.

With respect to source of knowledge about all the ICT tools by teachers and students, it may be concluded that most of them got knowledge by their own efforts.

Thus it is concluded that majority of the respondents had significant amount of awareness access and knowledge of information and communication technologies to enhance ICT competencies related to different aspects of their utilization. Hence, it can be said that ICT is a gateway to vast sources of information for teachers and students. This includes the case for ICT as having the great potential to increase access to knowledge. Access to different forms of information and communication technologies has increased the ability of teachers and students to carry out more informed research.. ICT in educational sector can greatly enhance the quality of education.

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How to cite this article:

Naaz Bano and Seema Rani. 2021. Awareness, Access and Knowledge of Teachers and Students about Information and Communication Technologies (ICTs). *Int.J.Curr.Microbiol.App.Sci*. 10(01): 2049-2059.
doi: <https://doi.org/10.20546/ijcmas.2021.1001.236>