

Comparative Study on ICT Knowledge among Teachers and UG Students of Universities in India and Tanzania

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ABSTRACT

Information and Communication Technology (ICT) has opened a new visage to globalization in education. Studies over the past decade reflect a striking change in usage pattern of technology amongst teachers and students. Studies depict high utilization patterns of ICT among teachers and learners. In contrast to its extensively acknowledged importance, computer knowledge and computer related skills demonstrate a wide diversity, both regional and within students and faculties of the educational institutions. A study to assess the extent of ICT knowledge among teachers and UG students of College of Home Science, Professor Jayashankar Telangana State Agricultural University (PJTSAU), Hyderabad, India and Department of Food Science and Technology, Sokoine University of Agriculture (SUA), Tanzania was taken up. Exploratory research design was adopted to conduct the study. The total size of the sample of the study was 260, out of which, 200 were students and 60 were university teachers *i.e.*, 100 students and 30 teachers from each university. The basic knowledge of PJTSAU teachers was up to 94.66 percent, followed by intermediate knowledge of 80.33 per cent and advanced knowledge lesser than the above two levels *i.e.*, 73.5 percent. In the similar manner, SUA teachers gained 87.96 percent, 71 percent and 60 percent in respective levels of knowledge. Similar trend was observed even among the UG students though they scored less than the teachers. The difference in ICT knowledge between teachers and students of the universities is significant.

Keywords: ICT, Knowledge, Teachers, UG Students and Universities

INTRODUCTION

In the general context of globalization, and with ever-increasing demand for higher education, especially in developing countries, universities are faced with the challenge of providing education for such growing population of students. The only possible alternative is ICT-based learning, provided such technologies are properly mastered and necessary investments made in hardware and software as well as in human skill and training.

Information and Communication Technology has opened a new visage to globalization in education. The deployment and integration of ICT facilities into university for internet access and a web portal implementation that enable the university to carry out most of its activities ubiquitously is steadily growing in the developing nations.

Since the introduction of the first national ICT policy,

which strongly prioritized the education sector, Tanzanian higher education institutions have been playing an important role in developing the use of ICTs for educational purposes.

Pegu (2014) states that ICT has become an indispensable support system for higher education as it could address some of the challenges facing higher education system in India. While technology can influence the way how students are taught, it would also enable development of collaborative skills as well as knowledge creation skills. ICT enabled education will ultimately lead to the democratization of education and it has the potential for transforming higher education in India.

Studies over the past decade reflect a striking change in usage pattern of technology amongst teachers and students. Earlier which was used for mails, chats, movies, videos, video games, dictionaries, entertainment has expanded prospects exponentially by e-books, science

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apps, readymade power-point presentations, Wikipedia etc. The rapid development leading to enhanced literature retrieval applications, together with increased access to personal computers have changed both the study and practice environments in higher education. Studies depict high utilization patterns of ICT among teachers and learners. In contrast to its extensively acknowledged importance; computer knowledge and computer related skills demonstrate a wide diversity, both regional and within students and faculties of the educational institutions. This backgrounds a study to assess the extent of ICT knowledge among teachers and UG students of College of Home Science, Professor Jayashankar Telangana State Agricultural University, Hyderabad, India and Department of Food Science & Technology, Sokoine University of Agriculture, Tanzania was taken upto analyze the extent of ICT knowledge among the teachers and UG students of College of Home Science, Professor Jayashankar Telangana State Agricultural University (PJ TSAU), Hyderabad, India and Department of Food Science & Technology, Sokoine University of Agriculture (SUA), Morogoro, Tanzania and to find out the significant difference in ICT knowledge between the teachers and UG students of College of Home Science, Professor Jayashankar Telangana State Agricultural University (PJ TSAU), Hyderabad, India and Department of Food Science & Technology, Sokoine University of Agriculture (SUA), Morogoro, Tanzania.

METHODOLOGY

Exploratory research design was adopted to conduct the study. Duly following the norms of the stratified sampling technique, equal number of students from each study year i.e. four years, were chosen from College of Home Science, PJ TSAU, India, as the duration of UG programme is four years. Hence a total of 100 students at the rate 25 students from each year of study had become the sample of the study. Similarly, a total of 100 students from Department of Food Science, Nutrition and Consumer studies, SUA, Tanzania were selected. In case of selection of teachers from both the Universities, random sampling technique has been followed. A total 60 teachers at the rate of 30 from each University were selected. Thus, the total size of the sample of the study was 260, out of which, 200 were students and 60 University teachers.

RESULTS AND DISCUSSION

ICT knowledge was measured using schedule for the study and it was administered to respondents to rate their proficiency in the selected areas. University of Concordia (2011) scale of proficiency in computer application was

adopted for the study with suitable modifications. This measures the knowledge at three levels viz., basic, intermediate and advanced skills. As level of knowledge differs between teachers and students two different structured questionnaires were developed for the study and executed. The questions were framed covering Microsoft word, Microsoft excel and Microsoft power point as three were most commonly used software for any academic activity. Each level consisted of 10 items and if the respondents agree that they possess the skill, a score of '1' was assigned. Thus a maximum of 30 scores may be attained by the respondent.

ICT knowledge of UG students and teachers: The computed data is presented in table.1.

Table 1: Distribution of UG students based on their ICT Knowledge
n₁=100, n₂=100

Level of Knowledge	Students	
	PJ TSAU	SAU
Basic knowledge		
Open and edit existing documents.	87	76
Navigate in a document and perform a search.	92	87
Format characters and paragraphs; work with tabs, indents, margins, lists, breaks, spacing.	76	72
Use Auto Correct and Help tools.	77	72
Understand navigation and movement techniques.	82	78
Use simple arithmetic functions in the formulas	61	44
Enter, correct, and save data.	62	78
Create Slides in Outline view.	88	77
Modify slide text and check spelling	78	61
Work with text, drawn objects, and drawing tools, Use ClipArt and WordArt.	75	62
Mean score	77.80	70.70
Intermediate knowledge		
Work with sections, create templates, use styles, and customize them.	68	61
Create and format complex tables, and manage table data.	62	58
Insert graphic elements.	56	38
Create a Web Page based on a template and add hyperlinks.	51	47
Use graphic objects to enhance worksheets and charts.	71	77
Perform multiple-level sorting, use sorting options, and design considerations.	61	44
Use mathematical, logical, statistical, and financial functions.	71	72
Work with graphics, animation and multimedia, inserting movies and sound.	70	31
Work with the Office Suite to create slides from an outline and send slides to Microsoft Word.	86	70
Customize PowerPoint toolbars and automate the slide production	68	59
Mean score	66.40	55.70
Advanced knowledge		
Work with advanced styles and AutoFormat features, linking styles.	34	21
Work with very large documents that require a table of contents, footnotes, endnotes, and cross-references.	62	59
Manage and track document changes, using highlights and comments.	80	78

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Insert multimedia elements in a Web Page.	85	72
Customize the work area.	66	34
Use advanced functions (Names, VLOOKUP, IF, IS).	60	65
Work with Pivot Tables.	63	48
Use AutoCorrect and the Style Checker.	64	43
Build interactive presentations, using hyperlinks, creating interactive objects, working with Slide Show options, and using the Meeting Minder.	21	37
Explore online meetings and broadcast presentations	86	63
Mean score	62.10	52.00

Figures are in percentages

n₁: PJTSAU students, n₂: SAU students

The students of PJTSAU, Hyderabad, India scored higher than SUA, Morogora, Tanzania in all the three levels i.e., basic, intermediate and advanced. But, all the respondents showed similar trend towards three levels. A descending order i.e. higher scores in basic knowledge, followed by intermediate and advanced knowledge was observed. Highest score in case of basic knowledge is 92 percent on 'Navigate in a document and perform a search' (item.2) and lowest is 61 percent on 'Use simple arithmetic functions in the formulas' (item.6) in case of PJTSAU. Coincidentally, the SUA students also attained in the same way but lower than PJTSAU i.e., 87 percent on item 2 and 44 percent on item 6. In case of intermediate level knowledge, the highest score was 86 percent on 'Customize PowerPoint toolbars and automate the slide production' (item 10) and lowest on 'Work with the Office Suite to create slides from an outline and send slides to Microsoft Word' (item.9) for PJTSAU students. SUA students differed in intermediate level by attaining highest on 'Insert graphic elements' (item.3) and lowest on 'Work with sections, create templates, use styles, and customize them' (item.1). Even in advanced knowledge they differed. While PJTSAU students gained highest on 'Build interactive presentations, using hyperlinks, creating interactive objects, working with Slide Show options, and using the Meeting Minder' (item.9) and lowest on 'Manage and track document changes, using highlights and comments' (item.3), SUA gained highest on 'Customize the work area' (item. 5) and lowest on 'Use Auto Correct and the Style Checker' (item.8). These differences might be due to differences in ICT accessibility and training.

Table 2: Distribution of teachers based on ICT Knowledge
n₃=30, n₄=30

Level of Knowledge	PJTSAU	SUA
Basic knowledge		
Navigate in a document and perform a search.	100	98
Format characters and paragraphs; work with tabs, indents, margins, lists, breaks, spacing.	100	100
Use AutoCorrect and Help tools.	100	95
Control page and document appearance.	100	96.66
Modify a database and insert data from another application.	83.33	86.66

Understand navigation and movement techniques.	96.66	83.33
Print worksheets and workbooks.	96.66	96.66
Use Slide Show options; add transitions and animation.	90	63.33
Work with Notes.	83.33	70
Work with text, drawn objects, and drawing tools, Use ClipArt and WordArt.	96.66	90
Mean score	94.66	87.96

Intermediate level

Create a Web Page based on a template and add hyperlinks.	73.33	66.66
Run and record Macros.	70	66.66
Create Mail Merges, sort and filter them.	100	100
Customize Toolbars	73.33	60
Group and dissociate data and perform interactive analysis.	96.66	80
Perform multiple-level sorting, use sorting options, and design considerations.	86.66	76.66
Use mathematical, logical, statistical, and financial functions.	81.66	76.66
Work with graphics, animation and multimedia, inserting movies and sound.	81.66	50
Work with the Office Suite to create slides from an outline and send slides to Microsoft Word.	63.33	70
Customize PowerPoint toolbars and automate the slide production	81.66	63.33
Mean score	80.83	71.00

Advanced level

Work with advanced styles and AutoFormat features, linking styles.	81.66	70
Work with very large documents that require a table of contents, footnotes, endnotes, and cross-references.	66.66	66.66
Manage and track document changes, using highlights and comments.	53.33	36.66
Insert multimedia elements in a Web Page.	73.33	53.33
Use personalized toolbars.	60	76.66
Use spreadsheet Web components.	73.33	53.33
Work with Pivot Tables.	76.66	36.66
Use AutoCorrect and the Style Checker.	73.33	60
Build interactive presentations, using hyperlinks, creating interactive objects, working with Slide Show options, and using the Meeting Minder.	90	70
Explore online meetings and broadcast presentations	86.66	76.66
Mean score	73.50	60.00

Figures are in percentages

n₁: PJTSAU students, n₂: SAU students

The basic knowledge of PJTSAU teachers was up to 94.66 percent, followed by intermediate knowledge of 80.33 percent and advanced knowledge lesser than the above two levels i.e., 73.5 percent. In the similar manner, SUA teachers gained 87.96 percent, 71 percent, and 60 percent in respective levels of knowledge. Similar trend is observed even among students though they scored less than the teachers. The highest score (100%) of PJTSAU teachers was for 4 items in basic knowledge, those items are, item.1: Navigate in a document and perform a search,

item.2: Format characters and paragraphs; work with tabs, indents, margins, lists, breaks, spacing, item 3: Use AutoCorrect and Help tools and item.4: Control page and document appearance. The highest score (100%) of SUA teachers was for the item.2 in basic knowledge i.e., Format characters and paragraphs; work with tabs, indents, margins, lists, breaks, spacing. Both PJTSAU and SUA teachers gained highest score (100 in intermediate knowledge level for item no.3 i.e., 'Create Mail Merges, sort and filter them'. Highest score (90%) of PJTSAU teachers in advanced knowledge level is for item no.9 i.e., 'Build interactive presentations, using hyperlinks, creating interactive objects, working with Slide Show options, and using the Meeting Minder'.

SAU teachers gained highest score in intermediate level for the item' and for SUA teachers the highest score (76.66%) is for item no. 5 and 10 i.e., 'Use personalized toolbars and Explore online meetings and broadcast presentations'. Though PJTSAU and SUA teachers showed similar trend of gaining highest scores in three levels of ICT knowledge, the items in which they gained highest scores are different.

This may be because of their interests and inclination to learn new things and also other reasons like ICT availability and accessibility and lack of training. The difference between the teachers of PJTSAU and SUA. Difference between the levels of knowledge was computed and tabulated in table.3.

Table 3: Difference in knowledge levels of teachers and UG students
 $n_1=100, n_2=100, n_3=30, n_4=30$

Levels of knowledge	Teachers		Students	
	PJTSAU	SUA	PJTSAU	SUA
Between Basic level and intermediate level	13.84	16.97	15.70	18.70
Between intermediate level and advanced level	7.33	11.00	4.30	8.00

Figures are percentages
 n_1 : PJTSAU students, n_2 : SAU students n_3 : PJTSAU teachers, n_4 : SAU teachers

The difference between basic and intermediate knowledge was observed to be more than between intermediate and advanced knowledge. As and when one gets exposed to higher levels, the gain in knowledge enhances. If, the availability and access is enhanced the advanced knowledge may get enhanced.

Null hypothesis

There was no significant difference between students of PJTSAU and SUA in ICT knowledge.

Empirical hypothesis

There was significant difference between students of PJTSAU and SUA in ICT knowledge.

Table 4: Significance of difference in ICT knowledge among UG students

Variable	Mean scores		t-value
	PJTSAU	SUA	
Basic level	77.80	70.70	14.900**
Intermediate level	66.40	55.70	13.790***
Advanced level	62.10	52.00	21.330**

Significant 1% level of significance

As't' values were found positively significantly different at 1 per cent level of Significance, the empirical hypothesis was accepted and rejected null hypothesis.

Null hypothesis

There was no significant difference between teachers of PJTSAU and SUA in ICT knowledge.

Empirical hypothesis

There was significant difference between teachers of PJTSAU and SUA in ICT knowledge.

Table 5: Significance of difference in ICT knowledge among teachers

Variable	Mean scores		t-value
	PJTSAU	SUA	
Basic level knowledge	94.66	87.96	2.97*
Intermediate level knowledge	80.83	71.00	3.07*
Advanced level knowledge	73.50	60.00	2.17*

Significant at 1% level of significance

As't' values were found positively significant at 1% level of significance, hence the empirical hypothesis was accepted and rejected null hypothesis.

CONCLUSION

In both the universities, students scored more than 50 percent in all levels of ICT knowledge. They had more basic knowledge followed by intermediate level and advanced level respectively. In case of teachers, they had a very high score of basic ICT knowledge in both the universities. The difference in ICT knowledge between teachers and students of the universities is significant. 't' values were found to be positively significant @ 0.01 per cent level of probability, proving that the difference in ICT knowledge between the teachers and students of two universities is significant. Developing an information and knowledge society involves the incorporation of technological tools into education. This can only happen if teachers and students are properly trained to include

such tools into the classroom dynamics.

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