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An Inventory to Measure the Information and Communication Technology (ICT) Competencies of Teachers

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ABSTRACT

An inventory was developed to measure the ICT competencies of teachers. A tentative list of 51 competencies that can go into the scale of ICT competencies was prepared and given to the judges. The judges were asked to rate the competencies in the order of their importance on a three point continuum viz., most relevant, relevant and least relevant. The responses were given scores and mean was calculated for each competency. Finally, the weighted mean (2.537) of all competencies was obtained. The competencies, which were having a mean above the weighted mean, were retained in the inventory. The inventory so developed finally consisted of 41 competencies.

Key words : ICT, Inventory, Competency, Reliability, Validity

Twenty first century is characterized as information age. Information and Communication Technologies (ICTs) have become indispensable in our daily life to reinforce ourselves in the information society. ICTs can be broadly interpreted as technologies that facilitate communication and the processing and transmission of information by electronic means. Information communication technologies (ICTs) in this study was confound to the applications of computers and internet. The applications of computer included Microsoft word, power point slides and Microsoft excel while the applications of internet included e- mail and world wide web.

ICT competency was operationalised as a set of knowledge, skills and abilities in computer and internet applications that are useful for teaching by a teacher. An inventory was developed for the present study to assess the ICT competencies of teachers as perceived by themselves.

Zemke and Zemke (1999) suggested three ways of creating competency models. One approach is to identify pools of high performers and tease out the characteristics that distinguish them from average or low performers. An alternative is to start with an existing catalog of more or less generic competency elements for particular jobs and tailor them to local conditions. A third approach is to use an altogether generic dictionary of competencies provided by a consultant or training vendor.

MATERIAL AND METHODS

As a prelude of measure of ICT competencies, a list of 51 competencies that can go into the scale of ICT competencies was prepared consulting the literature and experts. These competencies were given to 40 judges. The judges were asked to rate the competencies in the order of their importance on a three point continuum *viz*., most relevant, relevant and least relevant. They were requested to feel free to add some more competency areas, if they feel important, and also delete unrelated competencies. After the responses were obtained, they were given scores as 3 for most relevant, 2 for relevant and 1 for least relevant competency area.

After giving scores to the competencies and coding the data, mean was calculated for each competency. Finally, the weighted mean of all competencies was obtained. The competencies, which were having a mean above the weighted mean, were retained in the inventory of ICT competencies.

The validiny of the inventory of the ICT competencies was obtained through content validity method. Test-retest method was employed for reliability. After a lapse of 30 days, they were again administered with the same measurement, in the form of questionnaire. The coefficient of reliability was calculated between the first and the second administered scores to find the reliability.

RESULTS AND DISCUSSION

A list of 51 ICT competencies that can go into the scale of ICT competencies was prepared. These competencies were given to 40 judges. The judges rated the competencies in the order of their importance on a three point continuum *viz*., most relevant, relevant and least relevant. After giving

Table 1. ICT competencies along with mean values.

Sl. No.	ICT competency	Mean
	General	
1.	Setting up a system	2.725*
2.	Turning on the system	2.750*
3.	Mouse operation skills	2.750*
4.	Setting up a printer	1.275
5.	Printing the document	2.750*
6.	Setting up a scanner	1.075
7.	Scanning text, pictures, photographs etc	2.725*
8.	Setting up LCD	1.100
9.	Turning off the system	2.725*
	Microsoft Word	
10.	Preparing a word document	2.725*
11.	Editing text	2.825*
12.	Formatting of the text	2.775*
13.	Page setup	2.625*
14.	Using header and footer	2.750*
15.	Inserting page numbers, pictures, graphs and diagrams in a text document	2.675*
16.	Creating table	2.575*
17.	Creating hyperlink to the document	2.750*
	Power Point Slides	
18.	Selecting appropriate slide layout	2.650*
19.	Preparing slides	2.825*
20.	Giving appropriate color back ground to the slide	2.725*
21.	Formatting the slides	2.625*
22.	Editing of slides	2.675*
23.	Creating graphics	2.725*
24.	Animation	2.650*
25.	Preparation of flow charts	2.750*
26.	Inserting, pictures, graphs, diagrams, names, date and numbers in a slide	2.775*
27.	Creating hyperlink to the slide	2.800*
	Microsoft excel	
28.	Labeling	2.675*
29.	Feeding data in the cells	2.750*
30.	Using formula bar	2.775*
31.	Formatting a spread sheet	2.750*
32.	Drawing graphs	2.750*
	e-mail	
33.	Creating e-mail I.D	2.675*
34.	e-mailing	2.850*
35.	Sending and receiving attachments	2.725*
36.	e-chatting	2.750*
	World Wide Web (WWW)	
37.	Browsing	2.775
38.	Downloading information	2.800
	Others	
39.	Creating a file and folder	2.750*
40.	Creating new document	2.725*
41.	Scanning files with anti-virus	2.730*
42.	Desktop publishing	2.775*
43.	Installing and upgrading softwares	2.075
44.	Using functional keys	2.000
45.	Using Photoshop for editing photographs	2.625*
46.	Saving files or folders in storage devices	2.750*
47.	Creating static documents	2.075
48.	Protecting the documents with passwords	2.125
49.	Poster making	1.900
50.	Making PDF documents	1.775
51.	Making voice files	2.050

* ICT competencies selected for the inventory

scores to the competencies and coding the data, mean was calculated for each competency. The weighted mean of all the competencies obtained was 2.537. The competencies, with mean above weighted mean i.e. 2.537, were retained in the inventory of ICT competencies. Thus, finally 41 competencies out of 51 were included in final inventory of ICT competencies. The list of 51 ICT competencies with their mean values are given in Table 1.

The following ICT competencies were included in the final inventory

General

1. Setting up a system: Connecting the monitor, CPU, keyboard, mouse, UPS and in turn connecting to the power supply
2. Turning on the system: Starting the computer
3. Mouse operation skills: Operating the functions *viz.*, click, double click, drag and selecting the text-using mouse
4. Printing the document
5. Scanning text, pictures, photographs etc
6. Turning off the system: Shutting down the system in a proper way

M S Word

7. Preparing a word document: Opening a word document and entering text into it
8. Editing text: Edit refers to select, cut, paste, align, underline, doing bold, italics, set tabs, using replace and find
9. Formatting of the text: Making changes in font, making paragraphs, giving bullets and drawing boarders
10. Page setup: Giving appropriate margins on all the sides of a page
11. Using header and footer: Specifying text at the top and bottom of the page
12. Inserting page numbers, pictures, graphs and diagrams in a text document
13. Creating tables: Drawing tables, inserting or deleting rows and columns, merging cells, splitting cells and splitting tables
14. Creating hyperlink to the document: Providing connecting link from one document to the other

Power Point Slides

15. Selecting appropriate slide layout
16. Preparing slides: Opening a new slide and entering text into it
17. Giving appropriate color background to the slide
18. Formatting the slides: Making changes in font, making paragraphs, giving bullets and drawing boarders
19. Editing of slides: Adding, deleting or inserting slides in the middle
20. Creating graphics: Making graphics using downloaded pictures
21. Animation: Giving moving effects to the text/pictures/graphs /etc
22. Preparation of flow charts
23. Inserting, pictures, graphs, diagrams, names, date and numbers in a slide
24. Creating hyperlink to the slide: Providing connecting link from slide to a document

Microsoft Excel

25. Labeling: Labels are the headings for the cells
26. Feeding data in the cells
27. Using formula bar: Using formula bar to perform desired calculations
28. Formatting a spreadsheet: Right/center/ left alignment of the data in the cells and using different fonts and styles for headings
29. Drawing graphs: Drawing graphs using data in the spreadsheets

e-mail

30. Creating e-mail I.D: Creating e-mail I.D. On your own
31. e-mailing : Sending, receiving and forwarding messages
32. Sending and receiving attachments: Sending and opening the received documents, photos, pictures, etc
33. e-chatting : Giving and receiving messages instantly between friends, colleagues and others

World Wide Web (WWW)

34. Browsing: Searching information on websites by giving appropriate key words
35. Downloading information: To transfer the information from the websites to computer or digital devices

Others

36. Creating a file and folder
37. Creating new document: Opening a new word document, text document, zip file and saving them
38. Scanning files with anti-virus
39. Desktop publishing: Designing booklets, reports, leaflets
40. Using Photoshop for editing photographs
41. Saving files or folders in storage

devices: copying and saving the files into Storage devices *viz*., compact disc, digital video device, floppy, pen drive

Validity:

The validity of the inventory of the ICT competencies was obtained through content validity method. The competencies selected for the inventory were evaluated individually and as a whole by the judges. These were again checked by experienced teachers for their relevance and coverage. It was felt by them that all the items were relevant and covered entire ICT competencies under consideration. Hence, it may reasonably be assumed that the ICT competencies inventory has content validity.

Reliability:

For calculating the reliability, test-retest method was employed. The coefficient of reliability between the first and the second administered scores was fairly high (0.876) and was significant at 0.01 per cent level of probability thereby showing that the measurement was reliable.

ICT inventory developed would enable the researchers to measure the ICT competencies of teachers. Based on the level of competencies, necessary steps could be taken by the respective educational institutions to enrich the knowledge, skill and abilities of teachers in handling, operating and using computers and internet. The ICT inventory can not only be used in Agricultural Colleges but can be used in other educational institutions where similar situations prevail.

LITERATURE CITED

Zemke R and Zemke 1999. Putting competencies to work. *Training*. January. pp 70-76

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