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Measuring the ICT competency among under graduates agricultural students of Rajasthan

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Abstract
The present study was conducted in S.K.N. Agriculture University, Jobner. There are four constituent colleges of S.K.N. Agriculture University, Jobner out of these two colleges, namely S.K.N. College of Agriculture, Jobner (Jaipur) and College of Agriculture, Lalsot (Dausa) were selected purposely due to having sufficient ICT infrastructure for the use of agriculture students. From two selected colleges 105 respondents were selected using proportionate random sampling method. Majority of the under graduate agricultural students of SKNCOA, Jobner competent in internet suffering of different online information searching activities, whereas Majority of the COA, Lalsot competent in chatting with friends of different online information searching activities.

Keywords: ICT, competency, internet, computer

1. Introduction
Information and communication technology (ICT) had brought about a revolution in every walk of today's life (Kapoor 2014) [6]. Particularly it has become an integral part of education and its impact on teaching and learning is widely accepted (Malik 2009) [7]. Information and Communication Technology (ICT) is a comprehensive concept and parallel concept with Information Technology (IT) that denotes not only a single unit of technology but an assemble of technologies like telecommunication equipment (Adeagbo 2011) [3], data processing equipment (Atual 2017) [4], semi-conductors, consumer electronics etc (Adeniran 2013). The use of ICTs in education also shifts the learning approaches (Kumar 2012) [11]. There is a common belief that the use of ICTs in education contributes to a more constructivist learning and an increase in activity and greater responsibility of students (Shankar 2019) [10]. ICT has bonded a strong relationship between teachers and students in agriculture (Aravindh Kumar 2019) [5]. For instance, the National ICT survey in the Netherlands shows that most primary school students use computers less than once a week and there are still many secondary school teachers who do not use ICT at all. Most often, they use computers for drill-and-practice and word processing (Raksha 2016) [9]. There are many ICT tools that are useful for education, with the help of these ICT tools schools, colleges and universities teachers are enhancing the education by providing a hybrid model of learning to the students (Natthu 2015) [8]. Transformation of learning environments in higher education settings for an increasingly electronic world is critical to ensure that the benefits are fully realized. In agreement with some scientists there are demands for universities to provide for a larger and more diverse cross section of the population, to cater for emerging patterns on educational involvement which facilitate lifelong learning and to include technology based practices in the curriculum. The aim of this study is to understand about under graduate agricultural students' competency towards ICT, which will be helpful in knowing the degrees of positivity or negativity of the ICT in relation to under graduate agriculture students and will also help in meeting their information in communication requirements swiftly.

2. Methodology
There are four constituent colleges of S.K.N. Agriculture University, Jobner namely S.K.N. College of Agriculture, Jobner (Jaipur), College of Agriculture, Lalsot (Dausa), College of Agriculture, Fatehpur (Sikar), College of Agriculture, Kumher (Bharatpur). Out of these two colleges, S.K.N. College of Agriculture, Jobner and College of Agriculture, Lalsot, was selected purposely due to having sufficient ICT infrastructure for the use of agriculture

students. A list of all agriculture students studying in B.Sc. Hons. (Ag.) III year and B.Sc. Hons. (Ag.) IV year in both the colleges was collected from the student section of the respective colleges. At S.K.N College of Agriculture, Jobner in third year and fourth year combined there are 184 students (108 boys and 76 girls) whereas in College of Agriculture, Lalsot, (Dausa), there are 78 students (62 boys and 15 girls), using proportionate random sampling method from two selected colleges 105 respondents, 74(43 boys and 31girls) agriculture students from S.K.N College of Agriculture, Jobner (Jaipur) and 31 agriculture students (25 boys and 6 girls) from College of Agriculture, Lalsot, (Dausa) was selected for study purpose. Perceived competence of respondents in using ICT was measured with a structured questionnaire developed by the investigator in light of the suggestions of the experts and the responses of the respondents were collected and then collected data was analyzed using MS-Excel and SPSS 16.0. Appropriate statistical techniques like frequency, percentage, mean and rank order were used in the study.

2.1 Mean percent score (MPS): MPS was obtained by multiplying total obtained score of the respondents by hundred and dividing by the maximum obtainable score under each practice.

$$MPS = \frac{\text{Total score obtained by the respondents}}{\text{Maximum obtainable score}} \times 100$$

2.2 Standard deviation (SD): It measures the absolute dispersion of variability of distribution. Here mean and SD was used in categorization of respondents in different categories.

Standard deviation (σ) was calculated by the following formula

$$SD = \sqrt{\frac{\sum X_i^2}{N} - \frac{(\sum Xi)^2}{N}}$$

Where,
$\Sigma_{xi}{}^2$ = Sum of squares of the variables
Σ_{xi} = Sum of values of the variables
N = Number of respondents

3. Results and Discussion
For measuring the ICT competency of the under graduate Agriculture students 7 indicators were identified on the basis of review of literature and discussion with the subject experts as described in the methodology. The findings regarding these indicators have been presented below.

Table 1: Competence of under graduate Agriculture students regarding basic computer operations and issues of SKNAU, Jobner

(n=105)

S. No.	Basic computer operation and issues	FC	RCU	OU	DU	NA	MPS	Rank
1	Connecting the computer and its peripherals	60 (45.95)	10 (13.51)	35 (40.54)	0 (0.00)	0 (0.00)	88.19	I
2	Locating and running application program e.g. word	36 (29.72)	43 (35.13)	22 (29.72)	2 (2.70)	2 (2.70)	86.67	III
3	Searching for files on computer system	45 (41.89)	43 (35.13)	13 (6.76)	2 (2.70)	2 (2.70)	86.86	II
4	Organizing electronic files into folders	30 (28.38)	44 (33.78)	23 (24.32)	6 (8.11)	4 (5.41)	76.76	VI
5	Moving files between drives (e.g. from A: to C).	18 (16.22)	60 (54.05)	21 (21.62)	2 (2.70)	4 (5.41)	76.38	VII
6	Printing to various networked printers.	3 (4.05)	42 (36.49)	50 (45.95)	5 (6.76)	5 (6.76)	66.29	X
7	Aware of computer security, copyright and the law.	5 (6.76)	40 (43.24)	51 (37.84)	5 (6.76)	4 (5.41)	67.04	IX
8	Aware of health and safety issues relating to the computing environment.	23 (27.03)	24 (25.68)	52 (39.19)	2 (2.70)	4 (5.41)	71.43	VIII
9	Accessing information on CD/DVD	39 (41.89)	38 (27.03)	25 (27.03)	1 (1.35)	2 (2.70)	81.14	V
10	Making power point Presentation	39 (41.89)	46 (39.19)	13 (9.46)	4 (5.41)	3 (4.05)	81.71	IV
							78.25	

The data presented in Table 1 revealed that the most important basic computer operation and issues faced by under graduate agriculture students of SKNAU, Jobner was for "Connecting the computer and its peripherals" (88.19 MPS), which was ranked first, followed by for "Searching for files on computer system (86.86 MPS), for "Locating and run an application program e.g. word" (86.67 MPS), for "Making power point Presentation (81.71 MPS), for "In accessing information on CD/DVD (81.14 MPS), for "Organizing electronic files into folders (76.76 MPS), for "Moving files between drives (e.g. from A: to C), (76.38 MPS), for "Aware of health and safety issues relating to the computing environment (71.43 MPA) and for "Aware of computer security, copyright and the law (67.04 MPS), which were ranked second, third, fourth, fifth, six, seventh, eighth, ninth and tenth respectively, The least important basic computer operation and issues by the under graduate Agriculture students of SKNAU, Jobner was for "Printing to various networked printers, (66.29 MPS), which was ranked last.

Table 2: Perceived ICT competence regarding different ICT items of under graduate Agriculture students of SKNAU, Jobner

(n=105)

S. No.	ICT Items	Excellent	Good	Fair	Low capacity	No capacity	MPS	Rank
1	Word processing eg. Microsoft	13 (12.38)	55 (52.38)	30 (28.57)	7 (6.67)	0 (0.00)	74.09	III
2	File navigation	18 (17.14)	47 (44.76)	13 (12.38)	24 (22.86)	3 (2.85)	70.09	V
3	Internet browsing	36 (34.29)	46 (43.81)	17 (16.19)	6 (5.71)	3 (2.85)	81.33	I
4	E-mailing	9 (8.57)	68 (64.76)	28 (26.67)	0 (0.00)	0 (0.00)	76.38	II
5	Power point presentation	24 (22.86)	27 (25.71)	37 (35.24)	15 (14.29)	2 (1.90)	70.66	IV
							74.51	

The data in Table 2 indicates that among the different perceived ICT Competencies the "Internet browsing' (81.33 MPS) was the most perceived ICT competency at top priority by the under graduate Agriculture students of whole SKNAU, Jobner which was ranked first, followed by in "E-mailing (76.38 MPS), in "Word processing eg. Microsoft" (74.09 MPS), and in "Power point presentation (70.66 MPS) which were ranked second, third and fourth respectively, The least important perceived ICT competence by under graduate Agriculture students of whole SKNAU, Jobner was in "File navigation (70.09 MPS), which was ranked last.

Table 3: Competence of under graduate Agriculture students of SKNAU, Jobner regarding the utilization of different internet resources

(n=105)

S. No	Utilization of internet resources	FC	RCU	OU	DU	NA	MPS	Rank
1	Can access an Internet site via its website address.	67 (63.81)	34 (32.38)	0 (0.00)	0 (0.00)	4 (3.81)	90.48	I
2	Can save text and images from web pages.	41 (39.05)	57 (54.28)	2 (1.90)	2 (1.90)	3 (4.05)	84.95	II
3	Can download files from the Internet.	27 (25.71)	70 (66.67)	3 (2.85)	1 (0.95)	4 (3.81)	81.90	V
4	Can send and receive e-mail messages.	39 (37.14)	57 (54.29)	6 (5.71)	2 (1.90)	3 (4.05)	86.29	III
5	Can attach files to outgoing e-mails.	24 (22.86)	47 (44.76)	25 (23.81)	3 (2.85)	5 (4.76)	76.19	VI
6	Can save a document in various file formats including HTML.	24 (22.86)	33 (31.43)	23 (21.90)	16 (15.24)	4 (3.81)	69.90	VIII
7	Can communicate online with other students on homework / assignment.	25 (23.81)	44 (41.90)	22 (20.95)	11 (10.48)	3 (2.85)	68.95	VII
8	Can use web search engines (google, alltheweb, altavista, etc) very well.	31 (29.52)	40 (38.09)	10 (9.52)	20 (19.05)	4 (3.81)	84.38	IV
9	Can chat on the Internet using instant messaging tools (Yahoo, MSN, Skype, etc.)	22 (20.95)	22 (20.95)	13 (12.38)	44 (41.90)	4 (3.81)	62.67	XI
10	Can use web authoring tools.	20 (19.05)	25 (23.81)	23 (21.90)	30 (28.57)	7 (6.67)	64.00	X
11	Can do deep web searching using appropriate meta search engines (Surf Wax, Vivissimo, HotBot, etc.) very well.	17 (16.19)	4 (3.81)	21 (20.00)	27 (25.71)	36 (34.29)	48.38	XII
12	Can sort messages and file in created folders.	26 (24.76)	39 (37.14)	3 (2.85)	34 (32.38)	3 (2.85)	69.71	IX

The data presented in Table 3 depicted that among the competence different internet resources the competence regarding "Can access an Internet site via its website address" (90.48 MPS) was highest internet resources by the under graduate Agriculture students was accorded first rank, followed by competence regarding "Can save text and images from web pages (84.95 MPS), "Can send and receive e-mail messages (86.29 MPS), "Can use web search engines (google, alltheweb, altavista, etc) very well (84.38 MPS), "Can download files from the Internet (81.90 MPS) and "Can attach files to outgoing e-mails (76.19 MPS) and were accorded second, third, fourth, fifth and sixth rank respectively, whereas the competence regarding "Can do deep web searching using appropriate meta search engines (Surf Wax, Vivissimo, Hot Bot, etc.) very well" (48.38 MPS), was the least used by the under graduate Agriculture students of SKNAU, Jobner and was assigned last rank.

This finding supports the view expressed by Malik *et al*. 2021. [2]

Table 4: Competence of under graduate Agriculture student of SKNAU, Jobner regarding the use of different peripheral ICT equipment (n=105)

S. No.	Peripheral ICT Equipment	FC	RCU	OU	DU	NA	MPS	Rank
1	Can use a digital camera to capture images.	6 (59.05)	39 (37.14)	1 (0.95)	0 (0.00)	3 (2.85)	91.24	II
2	Can use the web camera to communicate on the Internet	6 (5.71)	45 (42.86)	32(30.48)	0 (0.00)	22 (20.95)	62.48	IV
3	Can use spreadsheet to make predictions	4 (3.81)	22 (20.95)	45 (42.86)	12 (11.43)	22 (20.95)	55.05	V
4	Can set up and use Liquid Crystal Display (LCD) or Multimedia Projector	7 (6.67)	24 (22.86)	19 (18.09)	5 (4.76)	50 (47.62)	47.24	VI
5	Can use a scanner to copy images.	19 (18.09)	42 (40.00)	28 (26.67)	5 (4.76)	11 (10.48)	70.09	III
6	Can use smart phone	69 (65.71)	31 (29.52)	3 (2.85)	0 (0.00)	2 (1.90)	88.76	I
							69.14	

The data in Table 4 depicted that among the competence of different Peripheral ICT Equipment the competence regarding "Can use smart phone (88.76 MPS) was highest Peripheral ICT Equipment by the under graduate Agriculture students of whole SKNAU, Jobner which was ranked first, followed by competence regarding for 'Can use a digital camera to capture images' (91.24 MPS), for 'Can use a scanner to copy images' (70.09 MPS), for 'Can use the web camera to communicate on the Internet' (62.48 MPS) and for 'Can use spreadsheet to make predictions (55.05 MPS) which were ranked second, third, fourth and fifth respectively, whereas the competence regarding for "Can set up and use Liquid Crystal Display (LCD) or Multimedia Projector (47.24 MPS), was the least used by the under graduate agriculture student which was ranked last. This finding supports the view expressed by Kailash *et al.* (2017) [1]

5. Conclusion
Majority of the under graduate agricultural students in both the SKNCOA, Jobner and COA, Lalsot had competent in ICT about connecting the computer and its peripherals of computer operation and issues, internet browsing of faced ICT competence, can access an internet site via its website address of utilization of internet resources, can open a new document in word of use of application software, can use smart phone of use of peripheral ICT equipment and use of mouse of knowledge of computer.

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