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Impact of Information and Communication Technologies on Agricultural Education

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ABSTRACT

The present paper highlights the availability, awareness and usage of information and communication technology (ICT) among students of Agricultural Universities in Andhra Pradesh and Telangana. The results revealed that most of the students had the access to ICT tools like projector, computer, University website and mobile, but the tools like e-portfolio, teleconference, videoconference and digital student report card system were not available to most of the students in agricultural colleges. Student's awareness of ICT tools is same as that of availability. Most of the agricultural students were using mobile daily, but occasionally used the computer and projector. Majority of the students had improved their capabilities in concept understanding, academic performance, employment opportunities and higher education opportunities.

Key Words: Awareness, Academic performance, Availability, Communication, Information, Technologies.

INTRODUCTION

The success of agricultural development programmes in developing countries largely depends on the nature and extent of use of mass media in mobilization of people for development. The planners in developing countries realize that the development of agriculture could be hastened with the effective use of mass media for technology transfer (Md Salleh *et al,* 2010 ; Sharma *et al,* 2012). The information and communication technologies (ICTs) have become a pioneer and a powerful catalyst in education. However, there appears to be a misconception that ICTs generally refers to computers and computing related activities. This is fortunately not the case, although computers and their application play a significant role in modern information management, other technologies and systems like email, teleconference, video conference, television lessons, mobile, e-portfolio and virtual class rooms also comprise of the phenomenon that is commonly regarded as ICTs.

The ICT provides a great flexibility in education to ensure that learners are able to access knowledge regardless of space and time (Akele, 2013; Angadi, 2014). Hence, the ICT-empowered education system will eventually result in the democratization of education, predominantly in developing countries like India. By recognizing the ICT potential in providing learning experience to the students, the planners have given a thrust in providing ICT infrastructure in Agricultural Education System in India. Keeping this in view, the present study focused on studying the impact of information and communication technologies in agricultural education in Southern India.

MATERIALS AND METHODS

The present study was conducted in two southern states *viz*., Andhra Pradesh and Telangana. One University from each state i.e., Acharya N.G. Ranga Agricultural University (ANGRAU) from Andhra Pradesh and Professor Jayasankar Telangana State Agricultural University (PJTSAU) from Telangana was selected. Two oldest agricultural college campuses among the agricultural colleges of each university were selected for the study. Accordingly, the agriculture college, Bapatla and Sri Venkateswara agricultural college, Tirupathi were

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selected from ANGRAU of Andhra Pradesh state, while the college of agriculture, Rajendranagar and agricultural college, Aswaraopet were selected from PJTSAU of Telanagana State. The data were collected from from students studying third and fourth year in graduation and post-graduation during the year 2016. A well developed questionnaire was used for collecting the data. The data were collected from 424 respondents *i.e*., 347 graduate students and 77 post-graduate students of the four agricultural colleges of two State Agricultural Universities. Frequency and percentage were calculated and presented for interpretation of results.

RESULTS AND DISCUSSION

Availability and Awareness of ICT tools

The study was focused on the availability, awareness and usage pattern of ICT tools in agricultural education system and also the extent of improvement of the students in their academics and employment opportunities after using these ICT tools. The status of ICT tools among the students based on their education level was studied and the results are presented in Table 1.

From the data it was evident that availability and awareness was more in post-graduates compared to graduate students for all ICT tools except student report card system. Among all the ICT tools, the availability of projector (96.25%), mobile (91.64%) and university website (91.35%) was very high in the order of their priority followed by other common ICT tools viz., interactive white board and computer to the graduates and in addition to these e-library and wifi/LAN facilities were also more available for post-graduates. Least availability was noticed with e-portfolio in graduates (4.90%) and digital student report card (5.19%) in post-graduates. Video conference facility was relatively more available to post-graduates when compared with virtual class room while reverse was the case for graduates. The availability of wifi facility was relatively more to post-graduates compared to graduates and hence

Table 1 . Availability and awareness on ICT tools between graduate and post-graduate students in Agricultural Universities.

Sr. No	ICT Tools	Availability (Per cent)				Awareness (Per cent)			
		Graduates (n=347)		Post Graduates (n=77)		Graduates (n=347)		Post Graduates (n=77)	
		Yes	No	Yes	No	Yes	No	Yes	No
1	Interactive white board	82.71	17.29	84.42	15.58	90.20	9.80	90.91	9.09
2	Computer	88.76	11.24	100	0	91.91	8.09	100	0
3	Projector	96.25	3.75	97.40	2.60	93.95	6.05	97.40	2.60
4	Television	60.81	39.19	61.04	38.96	83.29	16.71	90.91	9.09
5	Video conference	28.53	71.47	49.35	50.65	51.30	48.70	51.95	48.05
6	Teleconference	13.83	86.17	28.57	71.43	34.01	65.99	45.45	54.55
7	E – Portfolio	4.90	95.10	6.49	93.51	10.66	89.34	18.18	81.82
8	Wi-Fi / LAN	35.73	64.27	90.91	9.09	64.55	35.45	94.81	5.19
9	Digital student report card system	12.97	87.03	5.19	94.81	28.24	71.76	24.68	75.32
10	Virtual classrooms	40.92	59.08	35.06	64.94	53.60	46.40	55.84	44.16
11	Mobile	91.64	8.36	93.51	6.49	92.22	7.78	96.10	3.90
12	E – Library	79.83	20.17	96.10	3.90	77.52	22.48	94.81	5.19
13	University Website	91.35	8.65	98.70	1.30	80.69	19.31	97.40	2.60

e-library was also more available to post-graduates. The availability of television was relatively less to the students compared to other common ICT tools like computer and projector. The availability of teleconference and videoconference was relatively less compared with other ICT tools except e-portfolio and digital student report card system however videoconference was relatively more available than teleconference for both graduates and post graduates.

The graduate and post-graduate students were highly aware about common ICT tools like computer, projector, interactive white board and mobile. The awareness on some of the modern ICT tools like video conference, teleconference and virtual classroom was more in graduates and post-graduates even though availability was comparatively less. The awareness on videoconference, teleconference and virtual classroom was almost equal in graduates and post graduates while the awareness on Wifi/ LAN and e-library was relatively high in post-graduates compared to graduates. The awareness of digital student report card system was low both in graduates and post-graduates but relatively awareness was more in post-graduates. The data clearly indicated that the awareness on advanced ICT tools e-portfolio and digital student report card should be created in all sections of students.

Further, the PG students have more awareness on all the ICT tools compared to UG students. The modern ICT tools like Digital Student Report Card System and Virtual classrooms were unavailable to majority of the students regardless of their courses and majority of the students have no knowledge about them since they are not available in most of the universities. The study conducted in Nigerian tertiary institutions also revealed that basic ICT facilities like computers were unavailable, students are unable to afford personal laptop, this has grossly affected e-learning and e-communication channels like email, e-board, internet and organized networking system between staff and students (Yusuf, 2005)

Table 2: Usage pattern of ICT tools between graduate and post-graduate students in Agricultural universities.

Sr. No	ICT Tools	Graduates (per cent) (n=347)			Post Graduates (Per cent) (n=77)		
		Never	Occasionally	Frequently	Never	Occasionally	Frequently
1	Interactive White Board	21.61	27.38	51.01	12.99	33.77	53.25
2	Computer	10.37	46.69	42.94	0	11.69	88.31
3	Projector	20.75	32.56	46.68	2.60	28.57	68.83
4	Television	34.29	21.33	43.38	32.47	35.06	32.46
5	Videoconference	83.86	14.41	1.72	74.03	23.38	2.60
6	Teleconference	89.63	7.78	2.59	76.62	19.48	2.59
7	E – Portfolio	97.41	1.73	0.86	96.10	3.90	0
8	Wi-Fi / LAN	58.21	19.31	22.47	7.79	10.39	81.81
9	Digital Student Report Card System	88.18	7.49	4.32	87.01	10.39	2.59
10	Virtual Classrooms	60.23	16.43	23.34	59.74	15.58	24.67
11	Mobile	7.78	8.36	83.86	7.79	7.79	84.41
12	E – Library	24.78	38.04	37.17	6.49	29.87	63.63
13	University Website	20.75	57.06	22.19	2.60	35.06	62.33

Usage pattern of ICT tools

The study on the usage pattern reveled that the percentage of graduate and post-graduate students using mobile daily were 83.86 and 84.41per cent, respectively. The university website was used occasionally by graduates (57.06 %) and frequently by post-graduates (62.33 %). The other common ICT tools like computers and projectors were used occasionally by both the students since preparation and presentation through power point has become common during in their academic curriculum. The use of university website was occasional by graduates (57.06%) and frequent by post-graduates (62.33%). Compared to graduates, the use of ICT tools by post-graduates was more frequent since computers and Wi-Fi facilities were more available to post-graduates.

The use of certain ICT tools like computer, projector and wi-Fi/LAN varied between graduates and post-graduates . Most of the graduates have never used Wi-Fi/LAN but post-graduates used daily. The tools computer and projector were occasionally used by the graduate students but were daily used by PG students because of the research work and seminars. The data clearly indicate that almost all the students have not used e-portfolio and more than 70 per cent students have not used videoconference and teleconference.

Extent of improvement of UG and PG students

The performance of students after using ICT tools were presented in Table 3. The study of improvement in their performance revealed that almost all the students have opined that their performance was improved in terms of concept understanding and academic performance. However, at graduation level students opined that the ICTs has given less impact on employment opportunity and higher education while post-graduate students expressed differently. ICT helps students to their learning by improving the communication between them and the instructors which ultimately lead to improved performance. They also reported that the adoption and use of ICTs in education has positive impact on teaching and learning which finally lead to have impact on students performance and achievements (Valasidou and Bousiou, 2005). ICTs have the

Table 3: Extent of improvement among graduate and post-graduate students by using ICTs in Agricultural Universities.

Sr. No.	Extent of Improv-ement	Graduates (Per cent) (n=347)				Post-Graduates (Per cent) (n=77)			
		Concept Under Standing	Acad. Perfor-mance	Employ-ment Opport-unity	Higher Educa-tion	Concept Under Standing	Academic Perfor-mance	Employ-ment Oppor-tunity	Higher Educa-tion
1.	No	1.73	4.61	15.27	7.20	0	0	3.90	1.30
2.	10 %	13.26	13.26	19.88	15.27	5.19	7.79	9.09	6.49
3.	20 %	7.78	9.51	5.76	6.92	2.60	5.19	5.19	3.90
4.	30 %	10.09	14.70	6.92	8.65	18.18	10.39	12.99	15.58
5.	40 %	3.75	2.88	2.88	1.15	5.19	3.90	5.19	7.79
6.	50 %	17.87	22.19	22.77	15.85	12.99	14.29	9.09	10.39
7.	60 %	6.05	6.05	3.46	2.88	3.90	12.99	12.99	7.79
8.	70 %	12.10	8.07	6.92	8.07	12.99	9.09	14.29	9.09
9.	80 %	9.51	9.51	8.07	15.85	12.99	16.88	6.49	16.88
10.	90 %	17.87	9.22	8.07	18.16	25.97	19.48	20.78	20.78

potential to innovate, accelerate, enrich, and deepen skills, to motivate the students (Yusuf, 2005).

CONCLUSION

The study revealed that traditional ICT tools like projector, computer and university website were accessible to most of the students. Majority of the students had awareness about the availability of ICT tools in their campuses and the tools like Wi-fi/LAN and computer were available to only post-graduate students. Maximum number of students had improved their performance in concept understanding, academic performance, employment opportunities and higher education opportunities. The institutional ICT policy and strategic plan should be defined to provide a framework for the development and implementation of specific ICT projects.

The ICT's in agricultural universities does not mean that introduction of new hardware and software, but both trainers and the students have to adopt new roles. Accordingly training programmes, short curses should be designed in coordination with latest developments to create awareness for effective utilization of ICTs in teaching and learning process.

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