ICT in Higher Education:A Case Study

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Abstract :

Traditional methods of teaching have been greatly augmented by the availability of newer technologies in the field of communication. We investigated various aspects of inclusion of ICT in teaching learning process at college level by conducting a survey. We found that students have adequate digital access, most prefer inclusion of 30-60% ICT in teaching and need to be counseled regarding ill effects of prolonged exposure to digital media.

Keywords : *ICT, higher education, survey, internet, teaching*

I. Introduction

The draft of National Policy on Education framed in 1986, and modified in 1992 stressed upon using Technology in improving the quality of education. The IT/ ICT policy in Education aims at preparing youth to develop a knowledge society for all round socio-economic development of the nation and enhanced global competitiveness. The IT/ICT literate community can benefit from IT/ICT and contribute to nation building [1]. Multiple factors have encouraged the adoption of ICT in teaching and learning. There is a growing need to explore how inclusion of ICT can improve program delivery, introduce flexibility for customized educational programs to meet the needs of individual learners and how internet and WWW can provide tools for information access and communication [2]. The use of the internet has increased exponentially to support teaching and learning, as more and more educational organizations are recognizing its potential [3]. Students use the internet information systems for both academic and non-academic work [4]. In this work a survey was carried out to find out the outcome of use of ICT based educational techniques at undergraduate and postgraduate level.

II. Materials and Methods

A questionnaire was designed to find out effect of ICT on teaching and learning process. Various aspects such as extent and means of digital access, awareness about e- resources, effectiveness of information transfer by ICT based teaching aids, extent of time spent on internet and its effect were studied. The questions were of closed type and included demographic, dichotomous and multiple choice questions. The data was collected by random sampling method from undergraduate and postgraduate students and analyzed.

III. Results and Discussion

A total of 128 questionnaires were collected from undergraduate and postgraduate students belonging to first year (FY) and second year (SY) of Bachelor's (BSc) and Master's degree (MSc I and II) in Science faculty. The demographic profiles of the respondents were as follows. There were 94 females and 33 males. They were between the age group of 16-24 years old.

A. Access To Internet Through Digital Media:

The students have digital access through various means including smart phone, personal computer (PC), laptop and tablet. The results indicate that (Fig. 1) 9% first year and 14 % second year undergraduate students did not have digital access through any means whereas all postgraduate students had digital access through smart phones or other digital media. Fifty two percent (FY), 60 % (SY), 88% (MSc. I) and 92% (MSc II) students had access to multiple digital media.

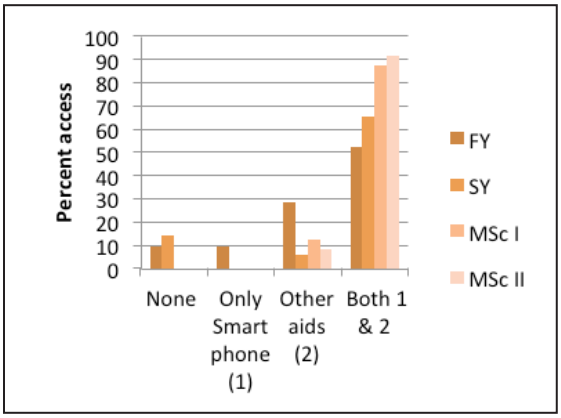

Fig. 1 Means of digital access

In order to analyze awareness about use of internet and to find out means of internet access data was collected. It was observed that 9% first year and 15% second year students did not have internet access at undergraduate level (Fig. 2). The postgraduate students were using smart phones, wifi, dongles etc. for internet access and only 1-3 % students did not have internet access. As expected in comparison to postgraduate students, larger proportion of undergraduate students were using digital library facility to access internet. Internet usage can lead to increased knowledge content. Goyal *et al.* [5] have carried out a survey among postgraduate students and have found direct correlation between internet usage and student performance.

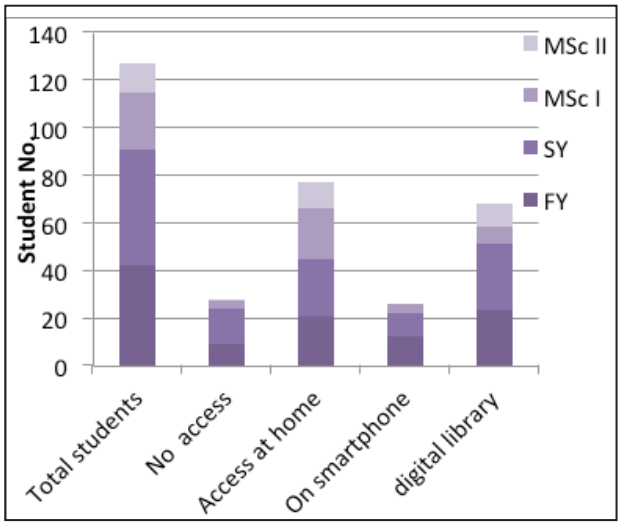

Fig. 2 Means of internet access

B. Preferred Teaching Aid:

In order to find out whether use of ICT based teaching methods are popular among students we took feedback about preferred teaching aid (Fig. 3). It was observed that 25 out of 42 (59%) first year BSc students prefer chalk and board for teaching. Students studying in second year of BSc and MSc want inclusion of ICT based techniques like use of overhead projector or MS PowerPoint presentations in classroom teaching.

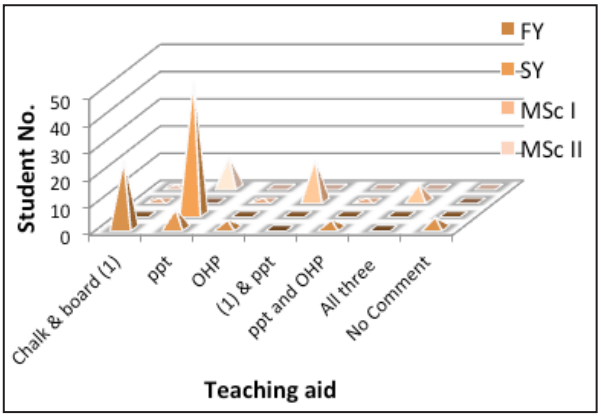

Fig. 3 Preferred teaching aid

Students want combination of blackboard teaching and use of ICT based teaching aids (Fig. 4). It was observed that 54% students want 30-60% of teaching by using ICT- based teaching aids whereas 21% students want 60-90% teaching done using ICT based teaching aids. Bora and Teki [6] have reported that students of north costal districts of state of Andhra Pradesh were in favor of use of ICT in higher education as it enables students to learn at the pace and time convenient to them and can repeatedly access the content delivered by faculty for clear and better understanding.

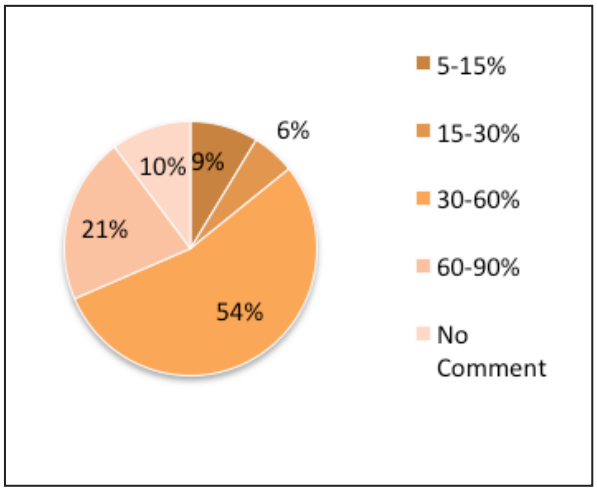

Fig 4 Desired percent of ICT based teaching

C. Percentage Of Students Accessing Websites Or e-Material On Their Own:

Luambano and Nawe [7] investigated the use of the internet by students of the University of Dar-es-Salaam. They have reported that the majority of

students did not use the internet due to the inadequacy of computers with internet facilities, lack of skills in internet use and slow speed of computers. However, we have found that college students in an urban setting have adequate access to digital media. A large percentage of college students access e-resources on their own in order to enhance their understanding of the subject (Figure 5): 75.82% of under-graduate (UG) students and 91.67% of post-graduate students view videos/animations on YouTube whereas 57.14% of UG and 100% PG students use e-Books as reference material. UG (60.44%) and PG (77.78%) students have also accessed e-Resources freely available at educational websites. More than half the number of UG (54.95%) and nearly three-fourth the number of PG (72.22%) students were found to access e-Journals. 34.07% of UG students and 88.89% of PG students engage in web-based or software based practicals; 38.46% UG and 33.33% PG students participated in webinars in order to improve their understanding of the subject.

D. Membership Of Groups On Social Networking Sites And Their Use:

Saunders and Pincas [8] have investigated the student's attitude towards information and communication technologies in teaching and learning in the UK. They found that the students believe that ICT has a significant role to play in supporting and enhancing their university learning experience. They see the use of ICT as potentially going well beyond the use of the Internet to search for resources and the use of email to stay in touch with tutors and fellow students.

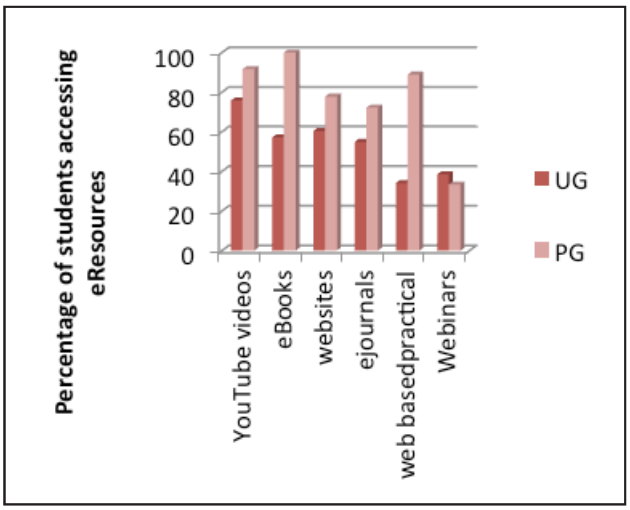

Fig. 5 Percentage of students accessing websites or e-material on their own.

We found that as a consequence of the high level of access to the internet many of the college students have become members of social networking groups and they use these sites to various extents for academic purposes (Figure 6): 90.11% of UG and 97.22% of PG students are members of social networking sites and 79.12% of UG and 94.44% of PG students share reference material/ links via them; 79.12% of UG and 88.89% of PG students share official notices and messages via these sites.

E. Hours Spent Daily By Students Using The Computer Or The Internet:

Khan *et al.* [9] evaluated the use of Internet by students. Responses showed that 39.0% respondents used internet daily, 20.7% respondents use internet twice a week, 33.5% respondents use weekly while 6.7% respondents were found as monthly users of internet. In stark contrast with this we found that (Table 1) most of the students access the internet daily. Most of the UG (63.74%) and PG (72.22%) students make use of the computer/ internet for up to 4 h daily whereas a substantial number of UG (24.18%) and PG (22.22%) students sit for long periods of time (4-8 h) on the computer/ internet. Six UG and one PG students spend an excessive amount of time (8-12 h and 18 h respectively) on the computer/ internet and need to be counseled with regards to the ill effects caused.

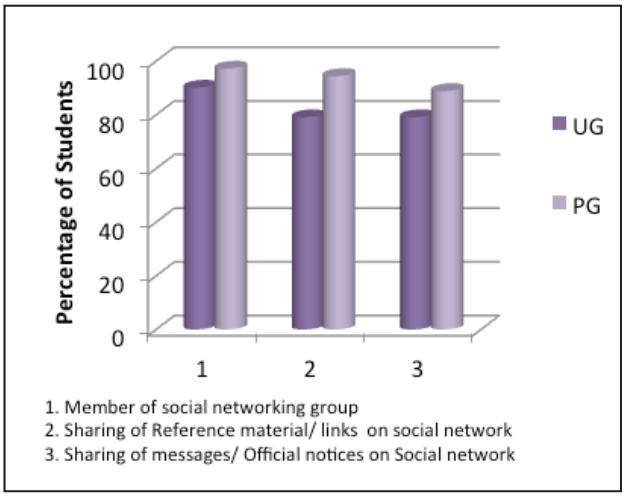

Fig. 6 Membership of groups on social networking sites and their use

F. Hours Spent Daily On Computer/ Internet Gaining Knowledge:

Luambano and Nawe [7] reported that most students who used the internet did not use it for academic

purposes. They have suggested that more computers connected to the internet should be provided and training should also be given to the students on the use of internet. Khan *et al.* [9] investigated the amount of time the respondents spend per week in different online information searching activities. They report that the respondents use the internet for 7-9 h/week, in browsing, scanning journals and reading e-mails while they spend 4-6 h per week in downloading articles, internet surfing and chatting with friends. We have found that (Table 2) a substantial number of UG (80.22%) and PG (94.44%) students use up to 4 h of their daily time in acquiring knowledge via the computer/ internet.

An alarming trend is that of some UG students who don't make much academic use of their time spent on the computer/ internet (one FYBSc student who spends 10 hrs daily on the computer/ internet and uses only 15-30 min of that time to gain knowledge; one SYBSc student who spends 12 hrs daily on the computer/internet and uses none of these hours to gain knowledge and 2 SYBSc students who use only 4-6 hrs of the 11-12 hrs they access the computer/ internet for gaining knowledge).

TABLE1
PERCENTAGE OF STUDENTS SPENDING VARIOUS AMOUNTS OF TIME DAILY ON THE PUTER/ INTERNET

Level	None (%)	0-4 hrs (%)	4-8hrs (%)	8-12h 18 hrs (%)	Total No. of students using net/computer daily (%)
UG	6.59	63.74	24.18	6.59	93.41
PG	2.78	72.22	22.22	2.78	97.22

TABLE 2
HOURS SPENT DAILY GAINING KNOWLEDGE

Level	None (%)	0-4 hrs (%)	4-8 hrs (%)	8-12hrs; 18 hrs (%)	Total students using net/ computer daily (%)
UG	10.99	80.22	8.79	0.00	89.01
PG	2.78	94.44	0.00	2.78	97.22

At the other extreme in our findings there are some UG (10.99%) and some PG students (2.78%) who don't daily make use of the computer/ internet to gain knowledge.

G. Problems Faced By Students Due To The Excessive Exposure To Computer/ Internet:

The American Optometric Association reports [10] that 83% of school going children (10-17 yrs old) spend 3 or more hrs. daily using electronic devices and 80% of them have digital eye strain (burning, itchy or tired eyes). They also state that everyday electronic devices give off high energy, short wavelength blue and violet light which may affect and age the eyes. We found that both UG and PG students face problems (Table3) such as eye-strain (UG: 49.45% and PG: 72.22%); disconnect from the real world (UG: 37. 36% and PG: 50%) and a problem concentrating while studying (UG: 48.35% and PG: 25%). It can be seen that as PG students are spending more time on the computer/ internet more of them are facing problems such as eye-strain and feeling a disconnect with the real world; whereas more UG students are facing a problem concentrating while studying. Hence both UG and PG students need to be counseled regarding the disadvantages of excessive exposure to computer/ internet.

TABLE 3.
DISADVANTAGES OF EXCESSIVE INTERNET USE

Level	Eyestrain (%)	Disconnect with real world (%)	Concentration problem while studying (%)
UG	49.45	37.36	48.35
PG	72.22	50	25

IV. Conclusions

1. Digital access: The students have adequate digital access through various means including smart phone, personal computer (PC), laptop, tablet and digital library.
2. Preferred teaching aid: Most first year B.Sc. students prefer chalk and board for teaching. Students studying in second year of B.Sc. and M.Sc. want the inclusion of ICT based techniques like use of overhead projector or MS PowerPoint presentations in teaching.
3. A large number of students view videos/animations on YouTube, use eBooks as reference material, access e-Resources freely available at educational websites, read e-journals, engage in web-based or software based practicals and participate in webinars in order to improve their understanding of the subject.
4. Many students are Members of social networking sites and share reference material/ links as well as official notices and messages via these sites.
5. Most of the UG and PG students make use of the computer/ internet for up to 4 hrs daily. However a few use it excessively and need to be counseled regarding the ill effects of such exposure.
6. A substantial number of UG and PG students use up to 4 hrs of their daily time in acquiring knowledge via the computer/ internet.
7. Both UG and PG students face problems such as eye-strain, disconnect from the real world and a problem concentrating while studying and need to be counseled.

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