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1 INTRODUCTION

With the advent of various technologies, The Open University of Sri Lanka (OUSL), as an institution offering instructions through Open and Distance Learning (ODL), has gone through generations of technology integrating audio-visual, multimedia and online learning into the core printed course materials. However, print has remained the core medium of instruction even though many initiatives have been taken to promote offering courses online. It is assumed that one of the main limiting factors is the access to these electronic technologies (e-technologies) by all students; remote students in particular.

According to the World Development Report (2016), more than 40 percent of the world's population has access to the internet, with new users joining every day. Among the poorest 20 percent of households, nearly 7 out of 10 have a mobile phone. The poorest households are more likely to have access to mobile phones than to clean water.

When considering new technologies for learning, student demographics, access to technologies and differences in how students learn from these technologies are the key factors that must be considered when selecting technologies (Bates, 2015). Access is perhaps the most

discriminating criteria among student related factors. If students do not have access to mediated technologies at the right time of the delivery to learn their subjects, the overall outcome would be ineffective even if the course materials are up to the required standards.

Therefore, the purpose of this research study was to find out the availability of electronic technologies (e-technologies) such as desktop/laptop computers and smart phones among the undergraduates of the Faculty of Health Sciences and how they use these e-technologies for learning. We expect the findings to provide some insights into the actual use of e-technologies among the undergraduates of the Faculty and will provide evidence to inform decision makers on the use of e-technologies by OUSL students considering this study as an indicative study.

1.1 RESEARCH QUESTIONS

The following research questions were investigated in this study:

- What types of e-technologies are accessible to the undergraduates of the Faculty of Health Sciences?
- What types of e-technologies do undergraduates use in their learning process?

- What types of e-technologies do they prefer to use in their learning process?

2 METHODOLOGY

The research design used in this study was an exploratory study based on survey research. Data were collected using a specially designed questionnaire to investigate the access and use of e-technologies by the undergraduates of the Faculty of Health Sciences. The survey sample consisted of 3162 students who were following the degrees programmes of Nursing (2674), Pharmacy (266) and Medical Laboratory Sciences - MLS (222). The questionnaire was administered at the end of the contact sessions such as day schools, continuous assessment tests and practical classes. Questionnaires from the nursing undergraduates were collected from all OUSL Regional Centres and for the other two programmes, questionnaires were collected only from the Colombo Regional Centre (CRC) as these two

programmes are delivered only at the CRC. Data were analysed using the SPSS software package and the frequencies, percentages and cross tabs were used in the quantitative data analysis. Content analysis was used to analyse the responses to the open ended questions in the questionnaire.

3 RESULTS AND DISCUSSION

3.1 Response Rate

We received 1680 (53.13%) responses for the study - Nursing: 1474 (55.12%); MLS 84 (37.84%); Pharmacy 122 (45.86%). The nursing sample was representative of students across the eight Regional Centres (Colombo 46%; Kandy 24%; Matara 12%, Anuradhapura 7%, Batticaloa 5%, Jaffna 4%, Badulla 2% and Kurunegala 1%).

3.2 Demographics of the sample

The demographics of the sample are illustrated in Table 1.

Table 1: Demographics of the participants from the three degree programme

		Nursing	Pharmacy	MLS
Gender	Male	09%	54%	52%
	Female	91%	46%	48%
Civil Status	Single	34%	26%	26%
	Married	66%	74%	74%
Employment	Full-time	98%	96%	100%
	Part-time	02%	03%	-
	No	-	01%	-
Ethnicity	Sinhala	91%	89%	93%
	Tamil	08%	10%	06%
	Moor/Malay	01%	02%	01%
Age	<24	01%	-	-
	25-29	30%	05%	01%
	30-34	50%	50%	46%
	35-39	14%	21%	21%
	40-44	04%	08%	18%
	45-49	02%	07%	06%
	>50	01%	09%	07%



Female participants were predominantly higher in the BSc Nursing degree programme (91%) while a higher male participation was observed in the Pharmacy (54%) and MLS (52%) degree programmes. When comparing the other demographics, a similar pattern was observed across all three degree programmes; almost all were employed, majority were married, belonging to the Sinhala ethnic group, and representing almost all the age groups; approximately 50% belonged to the 30-34 age group. The majority undergraduates of the Pharmacy (32%) and MLS (28%) were from the Colombo district. Among the Nursing respondents, majority were from Kandy district (16%), with 10% from Colombo.

3.3 Access to e-technologies

Findings (Figure 1) indicated that a majority of students (89%) from the total sample either own or have regular access, either to a laptop or a desktop computer. A majority (75%) have their own smart phone at present. Access to the internet was 90% and to a CD/DVD drive was 64%. Cross-tabulation indicated that among 10% who did not have the access to both internet and the CD/DVD, were representing 17 districts; 10% each from Kandy, Matara, and Galle, 8% each from Jaffna, Ratnapura, Hambantota, and Gampaha, 6% from Moneragala, Kurunagala, and Colombo, 4% each from Badulla, and Kalutara and 2% each from Ampara, Anuradhapura, Kegalle, Matale and Polonnaruwa.

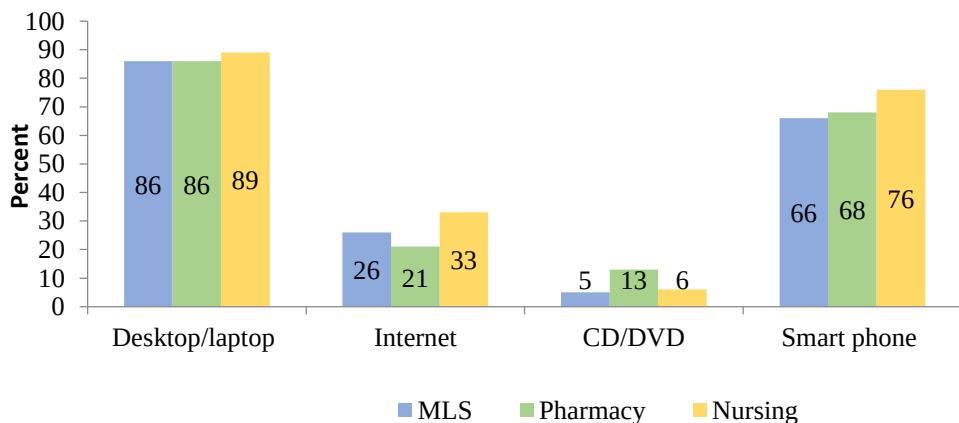


Figure 1: Access to e-technologies by the undergraduates of the Faculty of Health Sciences

3.4 Usage of e-technologies for learning

A majority of the undergraduates (58%) were familiar or confident in using the software package MS Word, while a comparatively lower percentage said they were familiar or confident in using spread sheets (34%), databases (22%) or graphic tools (11%), perhaps because these packages are rarely needed in their work

or study programmes. Among the undergraduates, only 6% said they had no knowledge of using email.

A majority of students had used one or more types of e-technologies for learning (68% Nursing, 79% Pharmacy and 83% MLS); a considerable percentage (42%) has used a Tablet computer for learning,

though 20% said they had not even heard of this device. Even though 75% stated that they have a smart phone, their usage of online courses was comparatively low (15%). This may be that they still use smart phones only for communication rather than for study purposes.

Most of the undergraduates (66%) said they used computers for study purposes from home (70% Nursing, 36% Pharmacy and 52% MLS) while some concurrently accessed from home and office (22% Nursing, 46% Pharmacy and 38% MLS). Findings also revealed that 40% tended to use the computer several times per week and 12% used every day for studies. Out of the daily users of the nursing students, 87% were females, married (65%) and 44% were in the 30-34 age group while 30% were in the 25-29 age group. In contrast, approximately 13% rarely or never used a computer while a minority had never used a computer. Cross-tabulation of computer access with their usage of online courses indicated that 8% of the respondents had never followed online courses even though they had the access.

3.5 Preferred for learning

Among the e-technologies, the most preferred were desktop/laptop computers (MLS 31%, Pharmacy 28% and Nursing 15%) and online (Pharmacy 26%; Nursing 17%, MLS 15%) and the least preferred was through a CD/DVD (Nursing 06%; Pharmacy 05% and MLS 01%). However, still the most preferred choice to learn OUSL courses was through printed material (Nursing 61%, Pharmacy 41% and MLS 53%).

When students were questioned about their willingness to receive the course materials as electronic versions (in PDF format) rather than printed course materials, a majority indicated their willingness (73% Pharmacy, 68% MLS, 58% Nursing). However, still a considerable percentage was reluctant to

study using electronic versions (42% Nursing, 32% MLS, 27% Pharmacy students).

Categorisation of the responses to the open ended questions in the questionnaire through content analysis showed portability, access from anywhere and at anytime, immediacy, easy to get the updates, clarity of the graphics, easy to read, easy to share among colleagues, as an alternative to overcome the delay in getting printed course materials were some of the positive reasons for their willingness to study through Tablet computers. Contrastingly, non-accessibility to computer/internet, non-familiarity with the technology, lack of technical support, more comfortable in using printed material, ease of reading, making notes and highlighting, health issues like eye strain, difficulty in using the monitor for a long time, lack of time in engaging online activities were reasons in favour of preference for printed materials over e-materials.

The most preferred format to receive the electronic version of the course material was through MyOUSL (40%), next, through the departmental webpage (23% for both MLS and Pharmacy, 12% for Nursing), and then through laptops/Tablets (16%). In contrast, the least preferred format was to receive it through online courses (5% MLS, 10% Pharmacy and 14% Nursing) implying the low popularity of online courses among the undergraduates in the Faculty of Health Sciences.

This may be due to the fact that either online courses were not available for their courses, or they have not seen the value of participating in interactive online courses or they were more comfortable in downloading the learning resources from MyOUSL/departmental web page for studying at a later stage as they engage in highly demanding professions.

4 CONCLUSIONS AND RECOMMENDATIONS

Findings of this study showed that a majority of the students have access to either a desktop, laptop, or a smart phone. However, still a considerable percentage (10%) does not have access to a computer with an internet connection, which includes students living in remote areas. Thus the OUSL needs to consider this issue when integrating e-technologies to learning. Even though a majority indicated their willingness to study through electronic versions, print was still the most preferred medium for study. Therefore, findings of this study could be used as an indicative study with respect to integration of e-technologies and need further exploration on the usage of e-technologies among undergraduates across all the Faculties which in turn will facilitate in taking a policy decision with respect to providing e-resources as core materials to OUSL learners.

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