



COMMONWEALTH *of* LEARNING

**Report of the Baseline Study on
Technology-Enabled Learning at the
Islamic University of Maldives**

جامعة المالديف الإسلامية
ISLAMIC UNIVERSITY OF MALDIVES



Report of the Baseline Study on Technology-Enabled Learning at the Islamic University of Maldives



COMMONWEALTH of LEARNING

The Commonwealth of Learning (COL) is an intergovernmental organisation created by Commonwealth Heads of Government to promote the development and sharing of open learning and distance education knowledge, resources and technologies.

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Abbreviations

COL:	Commonwealth of Learning
ICT:	Information and Communication Technologies
IUM:	Islamic University of Maldives
LMS:	Learning Management System
MOOC:	Massive Online Open Course
OER:	Open Educational Resources
TEL:	Technology-Enabled Learning

Executive Summary

This document reports the findings of a baseline survey and study conducted at the Islamic University of Maldives (IUM) to establish the level of technology-enabled learning (TEL) readiness at the institution in anticipation of developing TEL policy and implementing TEL with support from the Commonwealth of Learning (COL). It reports on the findings of a self-review of institutional facilities related to technology and policies and the readiness of faculty and students to use technology for teaching and learning at IUM. The following summary of the findings and recommendations is based on the findings of the study.

Key Findings

- The university provides Internet and Wi-Fi access to all its staff and in all its facilities.
- It has upgraded many of its classrooms with facilities such as cameras, televisions and computer systems in order to integrate online and blended teaching and learning.
- The university needs help to acquire facilities; strengthen infrastructure; and develop, plan and implement policies that support and integrate TEL for teaching and learning.
- Almost all faculty have access to technology such as smartphones, laptops, computers and the Internet. Most faculty use the Internet daily.
- Faculty have some knowledge of information and communication technologies' (ICT) use in teaching and learning, despite their lack of knowledge of the associated principles and lack of advanced ICT skills.
- Traditional face-to-face teaching is currently the most popular and preferred method of instruction.
- The majority of faculty are unaware of ICT policies and open educational resources (OER) for teaching and learning.
- Many faculty are motivated to use technology in teaching and learning because they have a personal interest in using TEL and enjoy being challenged intellectually.
- Some of the barriers to using TEL identified by faculty were access to technology, lack of time to develop e-courses, lack of instructional design expertise and lack of training.
- The students use smartphones more than other devices and use them more than any other device to access the Internet at home.
- Broadband connectivity in the classroom is very good.
- More than half of the students spent an average of five hours on Internet-related activities every day.
- Students' ICT skills were average, with students being most familiar with word processing.
- Facebook was the main social media platform used by students.
- In general, the students' perceptions of TEL were good.

Key Recommendations

- IUM must implement policies and procedures governing the use of ICT for teaching and learning
- It must:
 - develop its ICT infrastructure, specifically by providing access to high-speed Internet connectivity as well as open-source software, repositories and other resources;

- develop human capital in the field of technology while also providing adequate training to existing academic staff;
- create a blended mode course at IUM to facilitate technology-enabled teaching and learning; and
- conduct training programmes on advanced digital technologies for teaching and learning.

1.0 Introduction

The Islamic University of Maldives, formerly known as the College of Islamic Studies (Kulliyah Al-Dhiraasathul Islamiyyah), became a fully-fledged higher education institution on 21 February 2004. The college offered several academic programmes, with a special focus on awarding diplomas and degrees, and became the Islamic University of Maldives (IUM) by presidential decree in 2015.

IUM is driven by a dynamic, long-term vision and steadfast mission to provide high-quality academic training and research and to disseminate Islamic knowledge with real-world relevance to the modern and rapidly changing world. To ensure that IUM's vision and mission are achieved, the university has been engaged in a diligent process of reform. In order to enhance the quality of instruction at IUM, the institution intends to deepen and expand its virtual and e-learning programmes and to launch a focused initiative to supplement its traditional classroom teaching with technology-enhanced learning (TEL).

In April 2022, IUM signed an agreement to collaborate with the Commonwealth of Learning (COL) to adopt a systematic approach to implementing TEL. This agreement included a baseline study to assess institutional readiness, policy development and capacity building. It is hoped that the findings of this study will help in the planning, design, building and delivering of a TEL policy, and that it will provide a solid overview of the digital skills required for the subsequent implementation of TEL at IUM.

1.1 Methodology

A baseline survey composed of three separate questionnaires was administered to collect data and better understand the TEL environment at IUM. The information will be used to formulate policies and assess what technology-related facilities and expertise the university needs.

The target survey population included all the students and academic staff of IUM. As of December 2021, the total student population of the university is 2,100, and the full-time academic staff population is 65. The survey was attempted by 109 students and 57 academic staff. Fifty-four students, 49 academic staff and one of the senior management team completed the surveys.

Three baseline survey questionnaires provided by COL and adapted to the IUM context were used for data collection. The Questionnaire on Faculty Use of Technology for Teaching and Learning is designed to assess the TEL environment and enabling policies, including understanding faculty's access to media and technology and how they use these; faculty's perceptions and beliefs about the use of technology for teaching and learning; and the use of digital resources, including open educational resources (OER), for teaching, learning and research in an educational institution. The Questionnaire on Learner Use of Technology is designed to assess the technology-enabled learning environment and enabling policies, including students' access to media and technology, and their use of and preferences for adopting technologies for learning in an educational institution. The third questionnaire, Technology Enabled Learning at IUM, was sent to one member of the senior management team and mainly assessed the TEL environment and enabling policies at IUM. The questionnaires were adopted

from COL's *Technology-Enabled Learning Implementation Handbook* (Kirkwood & Price, 2016). To collect data from faculty, the survey links were shared among all faculty and heads at IUM through the university's official Viber group. An email with the link and an invitation to participate in the survey on a voluntary basis was also sent to all the faculty and heads. The data from students were collected by sending email requests to all students enrolled in the IUM student database with a request for voluntary participation. The data were analysed using descriptive statistics. The results and findings of the study are presented in the next three sections.

2.0 The TEL Environment at IUM

2.1 Background Information

IUM is one of two public universities in the Maldives. Although it was formally declared a university by an act of Parliament in 2015, it has a long history of Islamic education in the Maldives, first as the Institute of Islamic Studies, established in 1980, and later, following a promotion in status in 2004, as Kulliyyah Al-Dhiraasathul Islamiyyah. It currently employs 65 academic staff and 64 non-teaching and support staff. The university has six kulliyyahs (faculties) which offer courses at undergraduate, master's and PhD levels in various disciplines. It also has three centres to oversee the administration of postgraduate courses, teach and offer administrative support and help in a range of languages, prepare students for graduate courses and establish and promote research and publication.

2.1.1 ICT infrastructure and Internet connectivity

An institutional review was carried out via a baseline survey. According to the results of this survey, there are 105 computers/laptops/tablets in the university with an Internet connection. The university's classrooms, library, faculty rooms and other areas all have access to broadband Internet and wireless Internet connectivity. Internet access is also provided to all staff, students and visitors to the university. It is provided by one of the two private Internet service providers in the country: DHIRAAGU. The bandwidth ranges from 1 to 5 Gbps. Some Internet content is restricted due to security concerns. For example, access to social media platforms such as Facebook, Instagram, Twitter, WhatsApp and Viber and video content from YouTube and Vimeo is completely restricted (this was not addressed specifically in the survey questions about social media activity). However, the university has no restrictions on downloading e-books and other reference materials. IUM has official profiles on social media platforms such as Facebook and Twitter and has its own YouTube channel.

2.1.2 ICT facilities

The university has 20 e-classroom facilities. These feature resources such as overhead projection systems, SMART Boards and TVs. The university does not have the infrastructure (e.g., audio-visual production units/studios) or resources to produce e-content.

2.1.3 OER and MOOCs

The university has neither participated in the creation of e-content nor created e-content in the past year with other institutions or organisations. It does not have an institutional video channel or a repository to share e-content. There is no such repository at the national, state or regional level, although IUM does post institution-related material on its YouTube channel. The university also does not subscribe to any international repository for sharing e-content. E-content materials produced by the university are not available through a Creative Commons licence. The university is not a member of the OER Consortia or any formal OER network. Currently, IUM does not have a policy on OER in place. However, there is a policy to ensure accessibility to online courses off-campus. This policy does not provide support for students at risk to help them access online courses off-campus.

2.1.4 TEL facilities

There are 2,100 students enrolled in IUM, all of whom have taken at least one online course, some with limited face-to-face contact and others in blended mode. The university does not offer its courses in distance education mode and does not collaborate with any external partners to deliver online courses.

The technical facilities offered by the university include computers, projection systems, SMART Boards, computer labs, email services, etc. All online courses are offered using the Moodle learning management system (LMS). Other online resources available in the university include e-portfolio bandwidth, Wi-Fi access and a cloud-based file storage system.

Although IUM does not have access to statistical databases, it plans to offer additional resources such as statistical, qualitative data analysis and data visualisation software to facilitate teaching and learning. It currently offers access to data storage, bibliographic databases, citation and reference management software and plagiarism detection software. There is no system to access resources like e-newspapers, e-theses/dissertations, conference proceedings or patent databases. Support for the maintenance and repair of ICT-related equipment is available, and there is a workflow and escalation procedure in place for the repair and maintenance of ICT-related equipment.

2.2 Institutional Preparedness for TEL

Table 1 (below) shows IUM's institutional preparedness scores across ten dimensions. The responses were assessed using a five-point Likert scale, where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree.

Table 1. Institutional preparedness for TEL

Policy	(Scale 1–5)
There is a well-documented technology-enabled learning (TEL) policy.	1
The vision and mission of the TEL policy are aligned with the mission of the organisation.	1
The vision and mission of the TEL policy are well understood across the organisation.	3
There is a commitment on the part of the institutional leaders to use technology to achieve strategic academic goals.	4
Strategic plan	
There is a strategic plan for the implementation of TEL.	5
The strategic plan for TEL has measurable goals and outcomes.	5
The strategic plan for TEL is approved by the senior management of the organisation and is supported by adequate financial provisions.	5
IT support department	
The organisation has an IT department that handles procurement, installation and maintenance of technologies for teaching and learning.	5
There is an ICT policy in place, which is implemented by a high-powered committee in the organisation.	2
The head of the IT support department reports to senior management and is responsible for the overall functioning of the technology in the organisation.	5
The head of the IT support department is well qualified and up to date in order to manage the technological requirements of the organisation.	4

Technology	
There is adequate hardware infrastructure for teaching and learning (e.g., access to computers for students and faculty).	4
There are adequate applications and software for teaching and learning (e.g., access to appropriate software, intranet, learning management system, etc.).	4
There is adequate networking infrastructure in the organisation (e.g., access to adequate bandwidth).	5
There are adequate policies and procedures in place to protect privacy and the organisation's data.	2
Content	
There is support available for the creation of digital multimedia content in the organisation (e.g., production of e-courses, audio and video materials, animation, etc.).	1
There are instructional designers in the organisation or faculty members who are trained to organise learning content appropriately.	1
Teachers have adequate access to the online system to develop courses for TEL.	1
Documentation	
There is a variety of help available to support faculty and students use technology effectively.	4
Lessons learned in the implementation of TEL are stored and shared within the organisation for others to access and learn from.	1
The workflow processes and responsibilities to implement TEL are well documented in the organisation.	1
Organisational culture	
Faculty and staff members are willing to learn about new technology in the organisation.	4
Faculty and staff members support each other easily.	4
There is a culture of knowledge creation and sharing in the organisation.	2
Leadership	
Leaders in the organisation are involved in the implementation of TEL.	4
Senior management in the organisation regularly review, monitor and evaluate the progress of TEL.	2
The top leadership of the organisation is supportive of TEL and provides encouragement and motivation to the faculty and staff to achieve the academic goals.	4
Human resources and training	
Faculty members are qualified and trained to use technology for teaching and learning.	2
Faculty and staff members receive regular training to update them in the use of TEL.	1
There are adequate staff to support TEL.	4
The organisation has a structure in place to create teams for content development and delivery of TEL.	1
Faculty members trust the support received from instructional designers and technology support staff while developing and delivering the courses.	2
The IT staff members are highly skilled and trained to provide the needed support.	4
TEL champions	
There are early adopters of TEL in the organisation.	4
There are TEL champions in the organisation who support and care about pedagogic innovations.	1
There are faculty members who can take leadership roles in developing appropriate policies and a TEL strategy for the organisation.	4
There are TEL champions to research and disseminate good practices in TEL.	2

2.2.1 TEL policy issues

Although the university leadership is committed to achieving strategic academic goals, the university lacks a well-documented TEL policy that aligns with the commitments in the overall university strategic plan.

2.2.2 ICT support department

The ICT support department handles the procurement, maintenance and installation of technologies in the university. However, there is no ICT policy in place to guide the department in how to support and facilitate TEL that is integrated into teaching and learning. The head of the ICT department reports to the Deputy Vice Chancellor (Finance and Administration) and is answerable to the university's senior management team, which is responsible for the overall functioning of technology in the organisation.

2.2.3 Technology, content and documentation

There is adequate hardware and software available for teaching and learning. The network infrastructure is also adequate. However, there are no policies and procedures in place to protect privacy or the organisation's data.

Currently, there is no support available for the creation of digital multimedia content at IUM. The faculty also lack training in how to organise learning content. In addition, there is no instructional designer trained to support the faculty. The university offers some support for staff and students in the use of technology, but it lacks documentation such as workflow processes and responsibilities to ensure the effective implementation of TEL.

2.2.4 Organisational culture and leadership

The IUM staff are very keen to learn about new technology and support each other in using technology for teaching and learning. Nevertheless, there is a great need to foster a culture of knowledge creation and sharing in the university.

The leadership of IUM, including the top management team and the senior management team, support and are actively engaged in TEL at IUM. Given the university's inadequate TEL infrastructure, it is crucial that management participate actively in assessing, monitoring and evaluating TEL in the university in order to build a better TEL environment at IUM.

2.2.5 Human resources and TEL champions

The IUM faculty do not receive regular training and upskilling in using technology in teaching and learning. Hence, the university does not have enough staff who are trained sufficiently to support TEL.

While the ICT staff are well trained and highly skilled in supporting staff, they can provide only limited support because there are too few of them. Furthermore, the university does not have the necessary structure or resources (including instructional designers) to create teams to help staff to develop content and support delivery of TEL.

Several staff at the university were early adopters of TEL and have the capacity to take on leadership roles in developing appropriate TEL policies and learning strategies for IUM. However, overall, relatively few staff are actively interested in innovations, research and dissemination of good practices in TEL.

2.3 Summary

Since receiving university status in 2015, IUM has developed significantly in terms of infrastructure and resources. It provides all its staff and facilities with Internet connectivity and Wi-Fi access. It has upgraded many of its classrooms to include facilities like cameras, TVs and computer systems to integrate online and blended teaching and learning. The university also provides access to some useful software to facilitate teaching, learning and research and to ensure quality. However, it needs help to acquire facilities; strengthen infrastructure; and develop, plan and implement policies that support and integrate TEL for teaching and learning.

Based on the data provided in Table 1, the total score for IUM is 109. According to Appendix 4 of the *Technology-Enabled Learning Implementation Handbook* (Kirkwood & Price, 2016), that categorises IUM as “developing preparedness.” This means that IUM has put in place some aspects of a TEL system, policies and infrastructure, and is in the process of developing a robust system. This report is also a step towards building a strong TEL ecosystem at IUM.

3.0 Faculty Survey

3.1 Background Information

Academic participants were recruited on a voluntary basis from all kulliyyahs. A total of 87% responded to the request for participants, and 65% of those completed the questionnaire.

3.1.1 Gender

Of the academics who responded, 45.8% were female and 54.2% were male (see Table 2). The responses from female and male academics were almost the same.

3.1.2 Age

As illustrated in Table 2, the majority (30.4%) of the teaching staff were between the ages of 41 and 45. The second-largest group comprised those aged 51–55. This group accounted for 23.9% of the respondents, a clear indication that IUM has a senior academic population.

3.1.3 Teaching position

The institution has one associate professor, representing 2.0% of the total staff. Thirty-five (71.5%) of those who responded are lecturers, 7 (14.3%) senior lecturers and 6 (12.2%) associate lecturers. (See Table 2.)

3.1.4 Highest academic qualification

IUM has a total of ten PhD holders and 33 master's degree holders, representing 20.8% and 68.8%, respectively. Five (10.4%) lecturers hold an undergraduate qualification. (See Table 2.)

3.1.5 Primary involvement in level of teaching

Three levels were defined to identify the stages of teaching, as well as how each staff member is involved in the dissemination of knowledge at the university. Table 2 shows that 24 teachers handle undergraduate programmes, 24 specialise in graduate-level courses and one conducts/supervises doctoral research.

3.1.6 Teaching experience

Table 2 shows that the most common level of experience was in the range of 16–20 years, with 12 (31.6%) staff members falling into that category. The 11–15 years and 21–25 years categories each accounted for 11 (28.9%) lecturers. Four staff members had taught for 26–35 years, five for 6–10 years and five for less than five years (10.6%, 13.2% and 13.2%, respectively). The data in Table 2 show that the majority of the faculty have long experience in teaching, which could indicate a need for the institution to help faculty to implement the use of technology.

3.1.7 Teaching area

Table 2 summarises information about the respondents' teaching disciplines. Education had the highest number of responses at 22, representing 45.8% of the total. The second highest was Islamic Studies, with a total of 10 (20.8%). Shariah and Law and Quranic Studies each had six (12.5%) respondents. Business Studies had three (6.3%) and Arabic Language had one (2.1%).

Table 2. Academic staff: Background information

		Frequency	Percentage
Gender	Male	26	54.2
	Female	22	45.8
Age group	26–30	1	2.2
	31–35	4	8.7
	36–40	5	10.9
	41–45	14	30.4
	46–50	9	19.6
	51–55	11	23.9
	56–60	1	2.2
	61–65	1	2.2
Designation	Senior lecturer	7	14.3
	Associate lecturer	6	12.2
	Associate professor	1	2.0
	Lecturer	35	71.4
Qualification	Doctoral	10	20.8
	Master’s	33	68.8
	Undergraduate	5	10.4
Disciplines	Arabic Language	1	2.1
	Business Studies	3	6.3
	Education	22	45.8
	Islamic Studies	10	20.8
	Quranic Studies	6	12.5
	Shariah and Law	6	12.5
	Years of experience		
	11–15 years	11	28.9
	16–20 years	12	31.6
	21–25 years	11	28.9
	26–30 years	2	5.3
	31–35 years	2	5.3
	≤5 years	5	13.2
	6–10 years	5	13.2
Primary engagement	Doctoral research	1	2.0
	Graduate or postgraduate teaching	24	49.0
	Undergraduate teaching	24	49.0

3.2 Access to and Availability of Technology

3.2.1 Ownership of and access to ICT

This section discusses data on the ownership and access to ICT devices and facilities both on campus and off-campus.

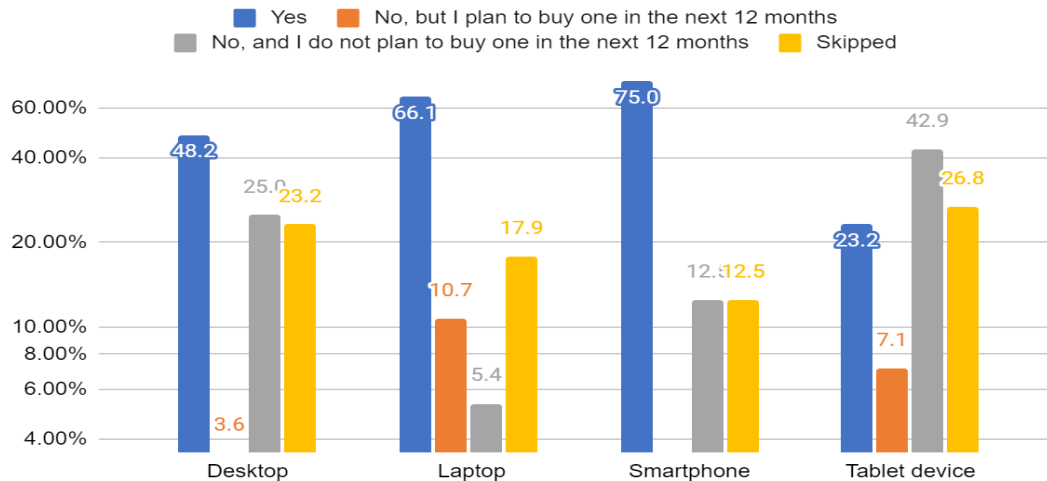


Figure 1. Respondents' ownership of devices.

Based on the data presented in Figure 1, we can see that 75% of faculty own a smartphone, and 66.1% and 48.2%, respectively, owned a laptop or desktop. In addition, among those who did not own either a desktop or laptop at the time of the survey, only 25.0% and 5.4% did not plan to buy one in the following 12 months. Given that so many faculty members own a smartphone, computer or laptop, the availability of Wi-Fi across the institution is key, as it makes the Internet readily available to everybody.

3.2.2 Internet access

The findings revealed that 82% of faculty access the Internet from their office, and 79% access it at home. (See Figure 2.)

As shown in Figure 3, smartphones are the primary device (75%) used to access the Internet, followed by laptops (66.1%) and desktops (48.2%). It is reasonable to assume that most individuals use smartphones and laptops because of their portability and the necessity to make phone calls.

Data obtained from the survey also revealed that the majority (97.56%) of the respondents are aware that IUM has broadband Internet connectivity. The responses were validated by the data depicted in Figure 4, which showed that individuals access broadband Internet from various locations on campus: classrooms, the library, faculty rooms, reception lounge, seminar halls, common rooms or open areas.

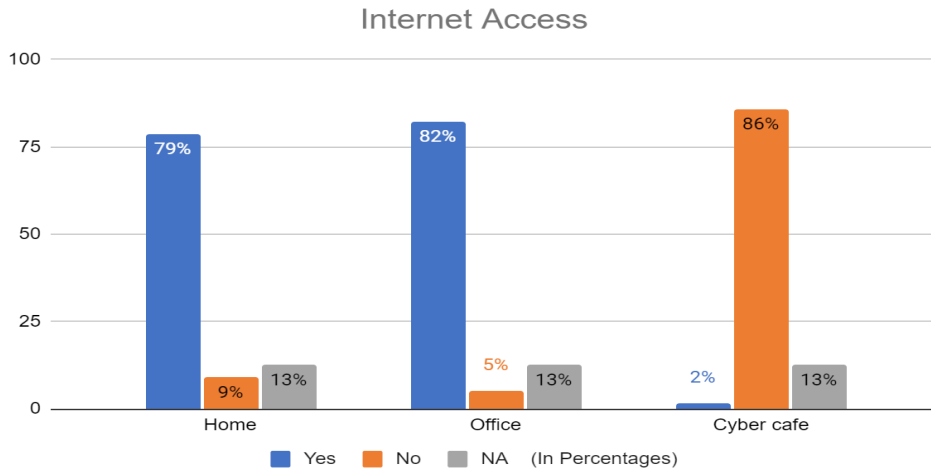


Figure 2. Respondents' access to the Internet.

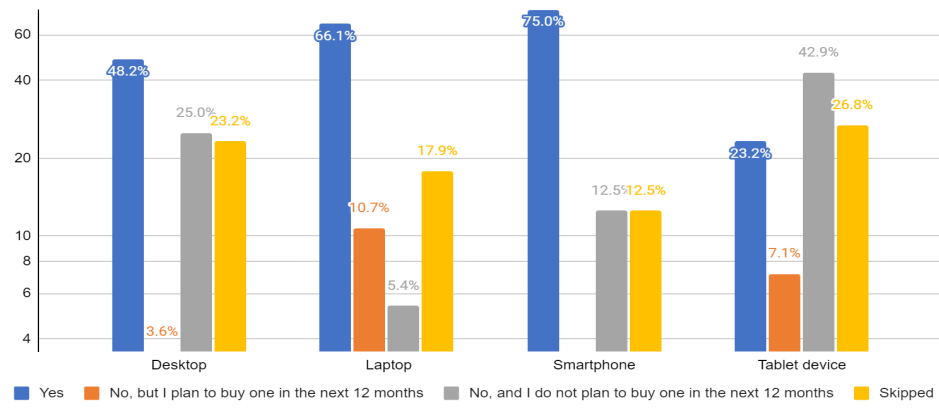


Figure 3. Respondents' use of technology.

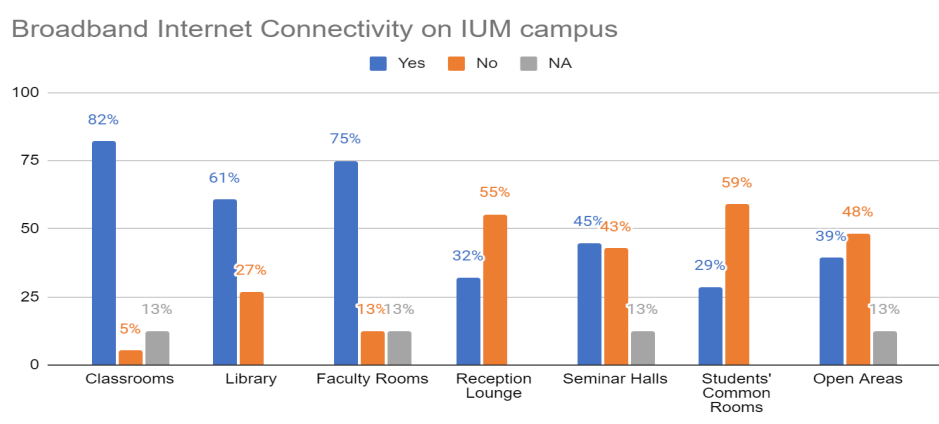


Figure 4. Respondents' broadband access.

3.2.3 Use of ICT

Given the readily available Internet access at IUM, it is not surprising that 79% of the faculty report using it daily. Of the remainder who answered this question, 4% use it on alternate days, 4% use it irregularly and 1% use it rarely. (See Figure 5.) In that regard, it is quite evident that IUM staff are acquainted with technology, a fact that will contribute to the effective and efficient incorporation of TEL into the existing curriculum.

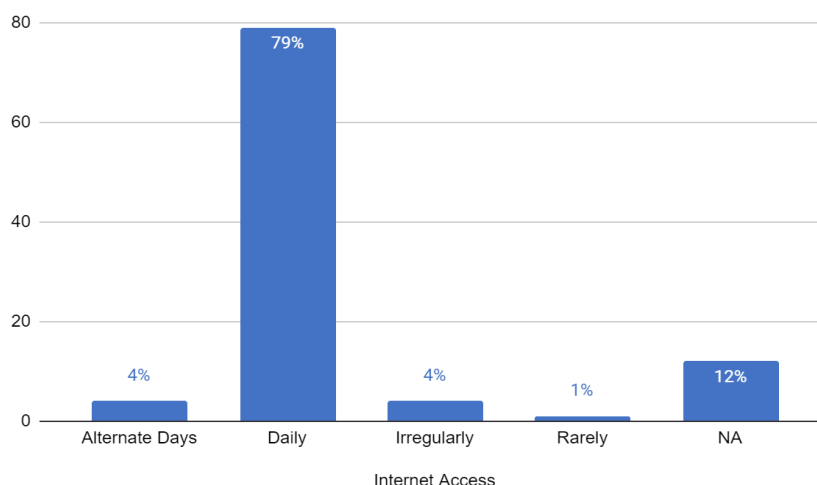


Figure 5. Frequency of Internet use.

The information in Table 3 indicates that the majority of the faculty are advanced users of word processing, spreadsheets, presentation software, email and an LMS, with a mean of 3.52 for the weighted averages. This is a promising sign in terms of implementing TEL. However, the number of skilled faculty decreases gradually in the areas of Web 2.0 tools, databases, multimedia authoring, graphic editing, video and audio editing and web page design. Faculty require further training in these areas to use TEL effectively.

Table 3. Competence in computer-related skills

	User level (basic)	User level (intermediate)	User level (trainer)	User level (advanced)	Non-user level (N/A)	Weighted average
Word processor	8.0%	35.0%	10.0%	46.0%	0.0%	3.6
Spreadsheets	19.0%	38.0%	8.0%	35.0%	0.0%	3.3
Presentation	8.0%	33.0%	10.0%	48.0%	0.0%	3.6
Email	8.0%	25.0%	10.0%	56.0%	0.0%	3.7
Databases	19.0%	21.0%	4.0%	35.0%	21.0%	2.8
Multimedia authoring	19.0%	19.0%	4.0%	28.0%	30.0%	2.6
Graphic editing	21.0%	13.0%	2.0%	19.0%	46.0%	2.1
Digital audio	23.0%	19.0%	2.0%	19.0%	38.0%	2.3
Video editing	29.0%	13.0%	0.0%	19.0%	40.0%	2.1
Web page design	22.0%	4.0%	2.0%	15.0%	57.0%	1.8
Learning management system	21.0%	19.0%	4.0%	55.0%	0.0%	3.4
Web 2.0 tools	25.0%	23.0%	4.0%	33.0%	15.0%	2.9
Communications platform	17.0%	29.0%	4.0%	50.0%	0.0%	3.4

3.2.4 Social media

Among the respondents, 71.5% of those who responded to the question about social media have a social media account. (See Figure 6.)

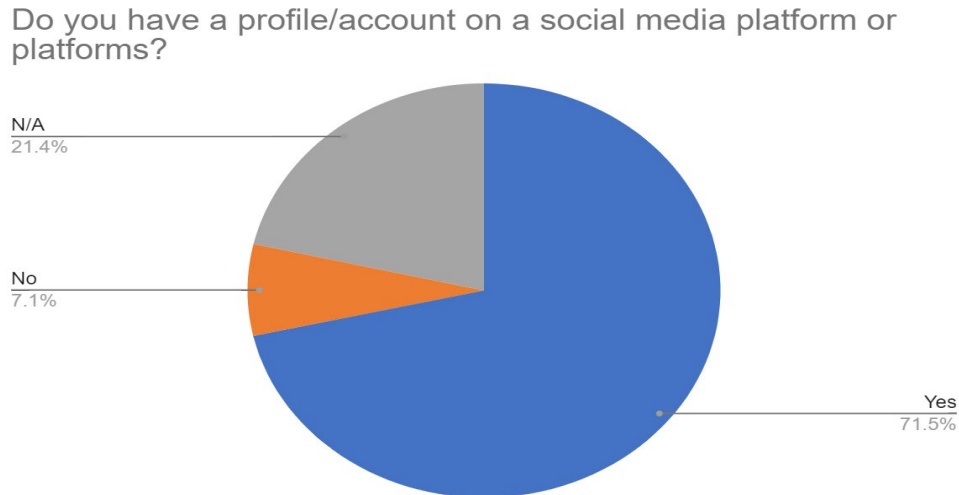


Figure 6. Social media: Presence.

Table 4 shows which social media platforms the respondents use. Facebook (69.6%) and Twitter (44.6%) are the most popular sites. Blogs, SlideShare, photo-sharing sites, research-sharing sites, social bookmarking and goodreads.com are noticeably less popular. Of particular note is that almost one quarter (23.2%) of the respondents do not use research-sharing sites. This indicates that the majority of IUM lecturers are unfamiliar with the academic social media platforms.

Table 4. Social media: Platform use

Social media platform	Frequency	%
Facebook	39	69.6
Twitter	25	44.6
Blog	6	10.7
SlideShare	11	19.6
Photo-sharing site	10	17.9
Research-sharing site (Academic.edu, Researchgate.net, etc.)	13	23.2
Social bookmarking sites (Delicious, Scoop.it, Pinterest, etc.)	6	10.7
Goodreads.com (for connecting with authors and readers) or similar	6	10.7

3.2.5 Experience with the TEL environment

We asked the faculty to indicate what TEL-related facilities are available in the university and to rate their experiences with them. The responses, shown in Table 5, indicate a significant scope for improvement in IUM's ICT facilities.

The faculty members were asked to rate their experience with the facilities using a five-point Likert scale, where 1 = poor, 2 = fair, 3 = neutral, 4 = good and 5 = excellent. The average

weighted score for different activities revealed that the faculty at IUM had a good experience in using e-classroom, computer labs, email services, learning management systems, e-portfolio, speed of Internet, Wi-Fi access, online or virtual technologies, access to software, use of free and open-source software, and support for maintenance and repair of ICTs. Email services received the highest rating, “excellent,” whereas computer labs, e-portfolio and access to software were rated as “fair.” The respondents rated e-classroom facilities as “poor.” The remaining facilities — learning management system, speed of Internet, Wi-Fi access, online or virtual technologies, use of free and open-source software, and support for maintenance and repair of ICTs — were rated “good.” This finding clearly indicates that there is a need for faculty to improve on their present use of the technological resources available at IUM if they are to benefit fully from TEL.

Table 5. TEL-related facilities at IUM

	Poor	Fair	Neutral	Good	Excellent	Not available	Weighted average
e-classrooms	21.0%	19.0%	6.0%	44.0%	8.0%	2.0%	3.9
Computer labs	17.0%	28.0%	9.0%	17.0%	6.0%	23.0%	3.0
Email services (institutional)	0.0%	10.0%	6.0%	48.0%	35.0%	0.0%	5.1
Learning management system	0.0%	10.0%	13.0%	52.0%	25.0%	0.0%	4.9
e-portfolio	6.0%	30.0%	13.0%	17.0%	6.0%	28.0%	3.0
Network bandwidth/speed of Internet	10.0%	13.0%	15.0%	48.0%	15.0%	0.0%	4.4
Wi-Fi access	17.0%	13.0%	8.0%	48.0%	15.0%	0.0%	4.3
Online or virtual technologies	10.0%	21.0%	17.0%	38.0%	10.0%	4.0%	4.0
Access to software	26.0%	26.0%	11.0%	13.0%	2.0%	23.0%	2.7
Download and use of free and open-source software for teaching and learning	15.0%	10.0%	21.0%	48.0%	2.0%	4.0%	4.0

3.3 Use of ICT for Teaching and Learning

3.3.1 Nature of the classes taught

We asked the faculty members to describe the nature of the classes they were currently teaching. According to the findings (see Figure 7), 71% use traditional face-to-face teaching, 43% use a blended approach and 38% use completely online teaching. These findings indicate that the traditional face-to-face teaching method is currently the most widely used mode of instruction at the university. A significant effort may therefore be required to change faculty’s perceptions of preparing and delivering lectures via TEL and trigger a shift from traditional face-to-face to online or blended modes of teaching.

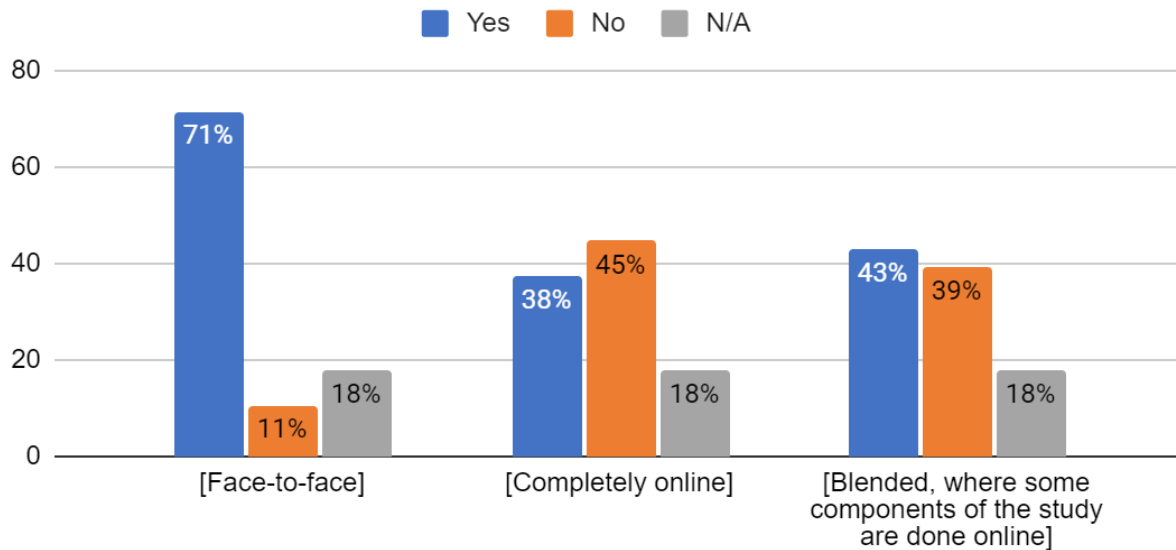


Figure 7. Nature of the class taught.

3.3.2 Use of digital resources/platforms in teaching

We asked the participating faculty to indicate how often they use digital resources and platforms in their teaching. Their responses were rated on a five-point Likert scale, where 1 = never, 2 = rarely, 3 = sometimes, 4 = often and 5 = always. The individual weighted average responses (see Table 6) indicate that the faculty often use presentations, learning management systems, Word files and images. They seldom use digital resources and platforms like simulations/animation, blogs and social bookmarking. This implies that the faculty use basic digital tools rather than more complex ones in their teaching and learning, which indicates the need to increase the use of advanced technologies to improve the TEL platform.

Table 6. Digital resource use at IUM

	Sometimes	Always	Often	Never	Rarely	Weighted average
Images (pictures, photographs, including from the Web)	26.7%	37.8%	20.0%	8.9%	6.7%	3.7
Presentations (e.g., PowerPoint, including from the online sources)	20.5%	63.6%	11.4%	4.5%	0.0%	4.3
Word files (activity sheets/handouts/notes)	22.2%	53.3%	20.0%	0.0%	4.4%	4.2
Digital films/video (e.g., YouTube)	46.7%	13.3%	13.3%	15.6%	11.1%	3.0
Audio recordings	42.2%	4.4%	17.8%	11.1%	24.4%	2.8
Simulations and 2D/3D animation/printing	22.2%	0.0%	4.4%	42.2%	31.1%	1.9
Learning management system	13.3%	55.6%	26.7%	4.4%	0.0%	4.3
Blogs	20.0%	4.4%	13.3%	37.8%	24.4%	2.2
Social bookmarking	20.0%	2.2%	8.9%	48.9%	20.0%	2.0
Microblogging (Twitter, Facebook, etc.)	20.0%	8.9%	15.6%	44.4%	11.1%	2.3
Open textbooks	46.7%	11.1%	20.0%	13.3%	8.9%	3.1

Open access research papers	31.1%	13.3%	28.9%	15.6%	11.1%	3.1
Google docs, Google sheet, Google form	31.1%	24.4%	31.1%	6.7%	6.7%	3.6

3.3.3 Skills for integrating ICT in teaching and learning

We asked the faculty members to rate their skills in integrating a variety of digital resources and platforms in their teaching. The skills were rated on a five-point Likert scale, where 1 = I can't use it, 2 = I can use it to a small extent, 3 = I can use it satisfactorily, 4 = I can use it well and 5 = I can use it very well. The individual weighted average responses (see Table 7) show that faculty believe they are more skilled in using tools like learning management systems, communication platforms and online video/audio in their teaching than in integrating tools and platforms like e-portfolios, lecture capture tools and accessible tools for people with disabilities. The findings indicate that the majority of faculty believe they are competent and confident in using basic digital tools for teaching and learning rather than advanced digital tools. Hence, advanced digital tool training for teaching and learning is an area that should be considered during TEL policy implementation.

Table 7. ICT-related skills integrated into TEL

	I can use it very well	I can use it well	I can use it satisfactorily	I can use it to a small extent	I can't use it	Weighted average
Learning management system (e.g., Moodle)	20.0%	39.0%	30.0%	9.0%	2.0%	3.7
Online collaboration tools (e.g., Adobe Connect, Google Docs)	14.0%	30.0%	36.0%	7.0%	14.0%	3.2
e-portfolio	5.0%	25.0%	18.0%	18.0%	34.0%	2.5
e-books/e-textbooks	14.0%	45.0%	16.0%	11.0%	14.0%	3.3
Online video/audio	12.0%	53.0%	16.0%	16.0%	2.0%	3.6
Educational games/simulations	5.0%	37.0%	12.0%	26.0%	21.0%	2.8
Lecture capture tools	5.0%	33.0%	17.0%	12.0%	33.0%	2.6
Accessible tools (for people with disabilities)	7.0%	20.0%	7.0%	0.0%	66.0%	2.0
Social media (blogs, wikis, etc.)	7.0%	33.0%	19.0%	14.0%	26.0%	2.8
Communications platform (e.g., MS Teams)	21.0%	35.0%	28.0%	12.0%	5.0%	3.6

3.3.4 Awareness and use of OER

We also asked the faculty about their awareness of OER. The results (see Figure 8) indicate that while 33.9% of the participating faculty did not know about OER in their discipline, 46.4% did know about it (the balance of 19.6% did not respond to the question). However, given that less than half of the faculty were aware of OER in their discipline, we can see that awareness levels are very low. Furthermore, the data in Table 8 indicate that only a small portion of faculty use OER in their teaching. OER are an important aspect of successful TEL implementation; thus, this issue must be addressed.

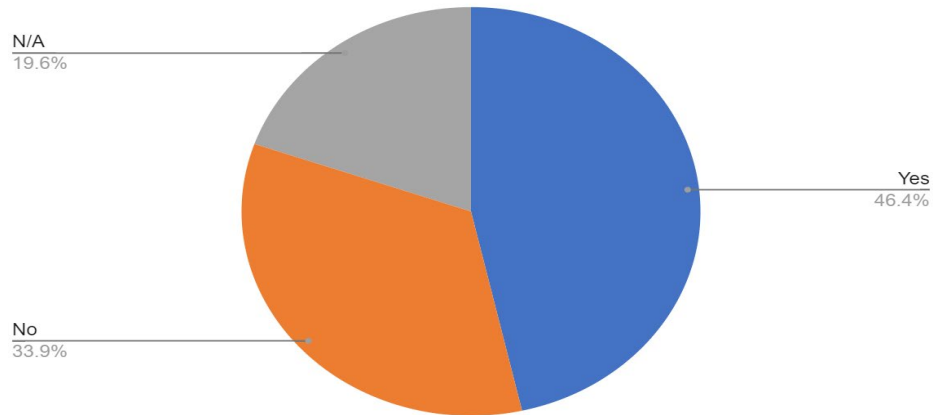


Figure 8. Awareness of OER.

Table 8. Use of OER in teaching

	Always	Often	Sometimes	Rarely	Weighted average
OER Commons	8.0%	15.0%	21.0%	56.0%	1.74
Saylor Academy	3.0%	3.0%	13.0%	82.0%	1.26
WikiEducator	8.0%	8.0%	28.0%	56.0%	1.67
OpenStax College	3.0%	3.0%	11.0%	84.0%	1.24
Campus Open Textbooks	0.0%	8.0%	13.0%	79.0%	1.29
NPTEL, India	0.0%	3.0%	11.0%	87.0%	1.16
MIT Open Courseware	0.0%	3.0%	8.0%	90.0%	1.13
Open Learn, UK	0.0%	3.0%	16.0%	82.0%	1.21
College Open Textbook	5.0%	8.0%	24.0%	63.0%	1.55
Directory of Open Access Journals	8.0%	21.0%	24.0%	47.0%	1.89
Director of Open Access Books	8.0%	16.0%	24.0%	53.0%	1.79
MERLOT	0.0%	3.0%	8.0%	90.0%	1.13

3.3.5 Training and staff development

As part of the survey, we asked faculty about training and staff development in technology and the use of ICT in teaching. As illustrated in Figure 9, 68% of the faculty who participated in the survey reported receiving training in using ICT for teaching and learning. Furthermore, 66% said they had attended online training sessions and 50% reported that the university regularly offers ICT training. However, the research also indicated that 57% of the faculty have not attended any MOOCs. Therefore, the data imply that more training in ICT for teaching and learning and MOOCs is required for the successful implementation of TEL at IUM.

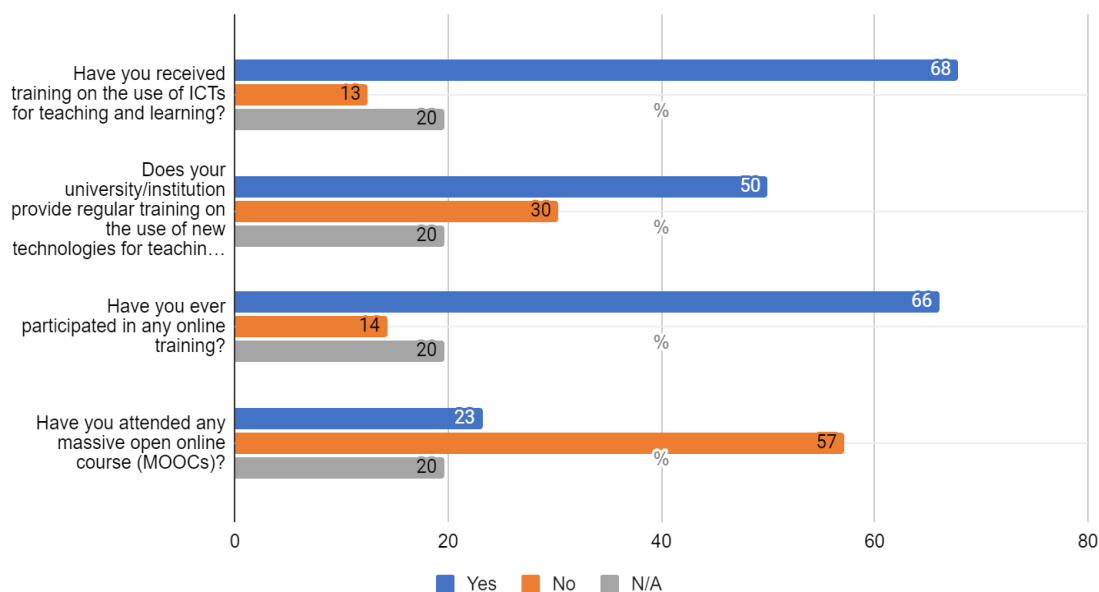


Figure 9. Training and staff development (%).

3.3.6 TEL-related policy

As part of the survey, we asked the faculty what they knew about policies related to TEL in the university. As indicated by the weighted average score (see Table 9), the majority of the faculty were aware of university policy in regard to plagiarism. However, low scores were observed for the survey's other policy-related questions, suggesting that most faculty were unaware of the policies that pertain to ICT in teaching and learning. It is therefore critical to raise policy awareness among the university's faculty.

Table 9. TEL policy awareness

	Yes	Do not know	No	Weighted average
Is there a policy for ICT use in teaching and learning in your university/institution?	39.0%	39.0%	23.0%	2.16
Is there a strategy for TEL in your university/institution?	51.0%	37.0%	12.0%	2.4
Is there an ICT policy in your university/institution (covering what technologies to use and not use for teaching and learning)?	34.0%	46.0%	21.0%	2.14
Is there a privacy and data protection policy in your university/institution?	30.0%	52.0%	18.0%	2.11
Is there a policy on dealing with plagiarism in your university/institution?	80.0%	16.0%	5.0%	2.75
Is there a policy for the use of open-source software in your university/institution?	25.0%	52.0%	23.0%	2.02
Is there a system in place for the use of open-source software in your university/institution?	23.0%	59.0%	18.0%	2.05

Is there a workflow and escalation procedure for repair and maintenance of ICTs in your university/institution?	39.0%	52.0%	9.0%	2.3
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3.4 Perceptions of TEL

The faculty's perceptions of implementing TEL at IUM were surveyed by assessing their attitudes towards TEL, motivators for using TEL and barriers to implementing TEL at IUM. The findings about the perceptions of implementing TEL are presented below.

3.4.1 Attitudes towards TEL

Faculty members at IUM were asked to respond to a range of statements to assess their attitudes towards TEL using a five-point Likert scale, where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree. Only 71% of the participating faculty members responded to the questions related to attitudes towards TEL; 29% left these questions unanswered.

According to the results displayed in Table 10, overall attitudes towards TEL among faculty members are very positive, with a mean weighted average of 4.29. This suggests that faculty are ambitious about implementing TEL and that this initiative will succeed.

Table 10. Attitudes towards TEL

Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Weighted means
TEL can solve many of our educational problems.	0.0%	5.0%	5.0%	50.0%	40.0%	4.25
TEL will bring new opportunities for organising teaching and learning.	0.0%	5.0%	2.5%	42.5%	50.0%	4.38
TEL saves time and effort for both teachers and students.	0.0%	7.5%	0.0%	35.0%	57.5%	4.43
TEL increases access to education and training.	0.0%	0.0%	2.5%	37.5%	60.0%	4.58
TEL increases my efficiency in teaching.	0.0%	2.5%	12.5%	32.5%	52.5%	4.35
TEL enables collaborative learning.	0.0%	2.5%	10.0%	40.0%	47.5%	4.33
TEL can engage learners more than other forms of learning.	0.0%	10.0%	20.0%	27.5%	42.5%	4.03
TEL increases the quality of teaching and learning because it integrates all forms of media: print, audio, video and animation.	0.0%	2.5%	15.0%	40.0%	42.5%	4.23
TEL increases the flexibility of teaching and learning.	2.5%	0.0%	5.0%	45.0%	47.5%	4.35

TEL improves communication between students and teachers.	2.5%	5.0%	15.0%	30.0%	47.5%	4.15
TEL enhances the pedagogic value of a course.	2.5%	5.0%	17.5%	32.5%	42.5%	4.08
Average weighted mean						4.29

3.4.2 Motivators for using TEL

We sought to identify motivators for using TEL at IUM by providing the faculty with various motivators and asking them to rate them on a five-point Likert scale, where 1 = very weak motivator, 2 = weak motivator, 3 = average motivator, 4 = strong motivator and 5 = very strong motivator (see Table 11). The average weighted mean of the responses was high, indicating that faculty are highly motivated to integrate TEL into their teaching. Most of the motivators are above average, implying that the TEL project will be promising at IUM.

Table 11. Motivators for using TEL

Motivator	Very weak motivator	Weak motivator	Average motivator	Strong motivator	Very strong motivator	Weighted mean
Personal interest in using technology	0.0%	5.0%	10.0%	32.5%	52.5%	4.33
Intellectual challenge	0.0%	5.0%	20.0%	37.5%	37.5%	4.08
Self-gratification	2.5%	2.5%	25.0%	25.0%	45.0%	4.08
Training on TEL	0.0%	7.5%	15.0%	32.5%	45.0%	4.15
Better Internet bandwidth at workplace	0.0%	10.0%	17.5%	25.0%	47.5%	4.10
Credit towards promotion	10.0%	12.5%	20.0%	17.5%	40.0%	3.65
Professional incentives to use TEL	7.5%	17.5%	15.0%	20.0%	40.0%	3.68
Technical support	2.5%	15.0%	25.0%	17.5%	40.0%	3.78
Peer recognition, prestige and status	7.5%	15.0%	27.5%	20.0%	30.0%	3.50
Improved infrastructure (hardware and software) deployment	5.0%	12.5%	15.0%	17.5%	50.0%	3.95
Release time/reduction in existing workload	2.5%	7.5%	12.5%	32.5%	45.0%	4.10
To be a trendsetter by early adoption of technology in education	2.5%	12.5%	20.0%	22.5%	42.5%	3.90
Average weighted mean						3.94

3.4.3 Barriers to using TEL

To identify the challenges the faculty face in embracing TEL, we asked them about their concerns relating to access to resources, their expertise in using the available resources and the quality of TEL. We used a five-point Likert scale to assess their concerns, ranging from a “very

strong barrier” to a “very weak barrier” (see Table 12). It is important to note that 29% of the participants in this survey left these questions unanswered.

The findings suggest these barriers may have an impact (average weighted mean of 3.46) on the implementation of TEL at IUM. This is reinforced by the responses that identify most of the barriers as above average or close to the average. Some of the significant barriers identified by the faculty include lack of time to develop online courses, lack of instructional design support for TEL and poor Internet access and networking in the university. Other barriers highlighted as particularly problematic were inadequate hardware and software availability, lack of training on TEL and a lack of role models. Barriers such as faculty workload and being intimidated by technology (both 20%) were regarded as average barriers, perhaps indicating the readiness of academics to embrace a TEL environment. However, the results also emphasise the value of offering training and the proper infrastructure to help faculty deal with the difficulties that come with working in a TEL environment.

Table 12. Barriers to using TEL

Barrier	Very weak barrier	Weak barrier	Average barrier	Strong barrier	Very strong barrier	Weighted means
Concern about faculty workload	10.0%	15.0%	42.5%	12.5%	20.0%	3.18
Concern about students' access to technology	2.5%	22.5%	25.0%	32.5%	17.5%	3.40
Lack of training on TEL	7.5%	17.5%	12.5%	27.5%	35.0%	3.65
Lack of technical support in the University	5.0%	15.0%	25.0%	32.5%	22.5%	3.53
Lack of institutional policy for TEL	7.5%	17.5%	25.0%	22.5%	27.5%	3.45
Lack of professional prestige	7.5%	15.0%	37.5%	20.0%	20.0%	3.24
Concern about the quality of e-courses	5.0%	10.0%	35.0%	22.5%	27.5%	3.58
Lack of incentives to use TEL	15.0%	17.5%	22.5%	25.0%	20.0%	3.18
Lack of credit towards promotion	20.0%	15.0%	25.0%	20.0%	20.0%	3.05
Intimidated by technology	17.5%	15.0%	27.5%	27.5%	12.5%	3.03
Concern about security issues on the Internet	10.0%	7.5%	25.0%	25.0%	32.5%	3.35
Inadequate availability of hardware and software	7.5%	22.5%	20.0%	27.5%	22.5%	3.63
Poor Internet access and networking in the university	5.0%	12.5%	22.5%	25.0%	35.0%	3.73
Lack of time to develop e-courses	2.5%	7.5%	25.0%	32.5%	32.5%	3.85
Lack of instructional design support for TEL	2.5%	10.0%	25.0%	32.5%	30.0%	3.78
No role models to follow	7.5%	10.0%	25.0%	25.0%	32.5%	3.65
Average weighted mean						3.46

3.5 Summary

The survey's focus was to understand the extent to which the teaching staff at IUM understood online teaching and learning prior to the anticipated TEL implementation. The data obtained indicated that almost all faculty had access to technology like a smartphone or laptop or computer and the Internet. The majority of the faculty mentioned that they use the Internet daily.

Most faculty are advanced users of word processing, spreadsheets, presentation software, email and LMSs. However, the number of skilled users decreases gradually in the more advanced areas. Faculty at IUM require further training in these areas if they are to use TEL effectively. It was also found that the majority of the respondents do not use academic social media sites, though some of the lecturers have accounts on general social media sites, like Facebook and Twitter. This suggests that the majority of IUM lecturers are unfamiliar with the academic social media platforms.

Regarding TEL experience, it was evident that the lecturers at IUM had a “good” experience in using some services, such as the LMS, Wi-Fi and email, but “fair” and “poor” experiences with other services, such as e-classrooms, computer labs and e-portfolios.

The data indicated that faculty had some understanding about the use of ICT in teaching and learning, even though they knew little about the principles and lacked advanced ICT skills. The positive responses to the survey questions are attributable to certain motivating factors that encouraged individuals to use technology in teaching and learning, including a personal interest in using TEL and an enjoyment of being challenged intellectually. Some barriers to implementing TEL were identified — for example, poor Internet access and networking in the university, lack of time to develop e-courses, and lack of instructional design expertise and training. These barriers need to be overcome if TEL is to be successfully implemented at IUM.

TEL can be successfully implemented and adopted if IUM works towards promoting motivating factors while also eliminating barriers to the use of technology for teaching and learning. While most of the issues are attributable to the physical environment and human resources, IUM will soon resolve the policy issues by developing and institutionalising an appropriate policy. Taking into consideration the identified motivators for and barriers to mainstreaming TEL at the institution, IUM should focus on strengthening its technology and support services to provide reliable access to technology.

The majority of the faculty indicated they were competent and confident in using basic digital tools rather than advanced digital tools for teaching and learning. They also indicated that they were most comfortable with and accustomed to traditional face-to-face methods of teaching. Few of the faculty who participated in the survey were familiar with OER and ICT policies related to teaching and learning. Overall, the findings suggest that training faculty in TEL integration will take a considerable amount of time and effort.

4.0 Student Survey

4.1 Background Information

The information about the students in Table 13 shows that 58.7% of those who participated in the survey were female and 41.3% male. Most (42.6%) of the students were aged 41 and older. It is interesting to note that 43.8% were studying undergraduate-level courses and most (43.4%) were in their first year. Islamic Studies and Education were the most commonly cited disciplines (each 26.5%), and Journalism, Arabic Language and Local Governance the least cited (each 2%).

Table 13. Students: Background information

		Frequency	%
Gender	Male	19	41.3
	Female	27	58.7
Age group	≤ 20	4	7.4
	21–25	5	9.3
	26–30	6	11.1
	31– 35	9	16.7
	36–40	7	13.0
	41 and above	23	42.6
	Level of study	Master’s	13
Undergraduate		21	43.8
Diploma		4	8.3
Certificate		8	16.7
Doctoral		2	4.2
Year of study	Year 1	23	43.4
	Year 2	11	20.8
	Year 3	13	24.5
	Year 4	6	11.3
Disciplines	Shariah and Law	7	14.3
	Business Studies	5	10.2
	Arabic Language	1	2.0
	Education	13	26.5
	Journalism	1	2.0
	Islamic Studies	13	26.5
	Quranic Studies	8	16.3
	Local Governance	1	2.0

4.2 Access to and Use of ICT

4.2.1 Ownership of and access to ICT

Figure 10 shows device ownership among the students. The study revealed that 97.30% of the students own smartphones, 81.58% own laptops, 31.25% own tablet devices and 29.41% own desktops. Access to ICT is more likely to be through smartphones than other devices.

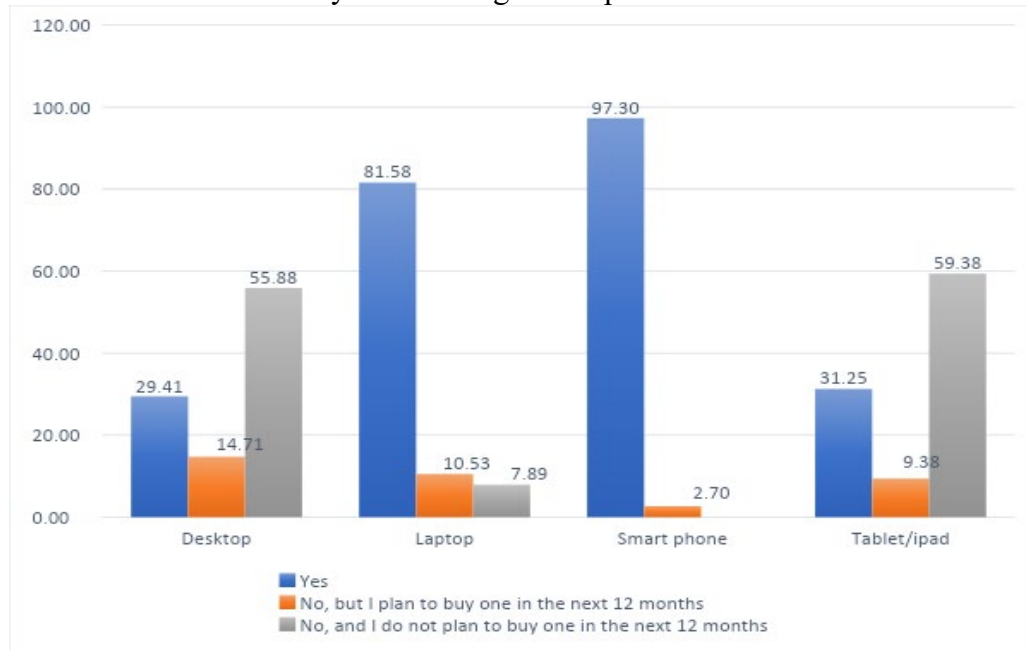


Figure 10. Ownership of ICT devices: Students.

4.2.2 Internet access and use

Most of the students stated that they use their own devices (laptop, 70.27%; smartphone, 66.67%; tablet device, 53.13%; and desktop, 31.25%) to access ICT at the university. (See Figure 11.)

As Figure 12 shows, the students revealed that they access the Internet mainly at home (90.48%) and the main device they use is a smartphone (76.3%). (See Figure 13.)

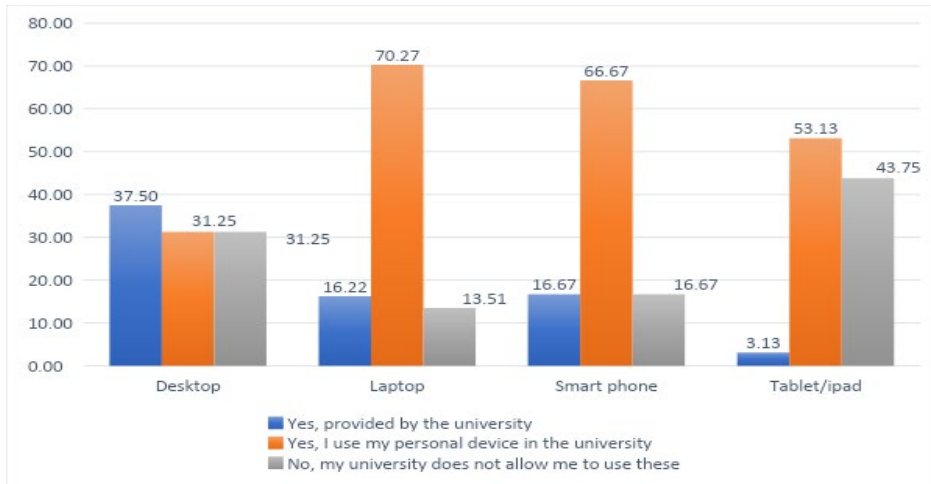


Figure 11. Students' access to devices in the university.

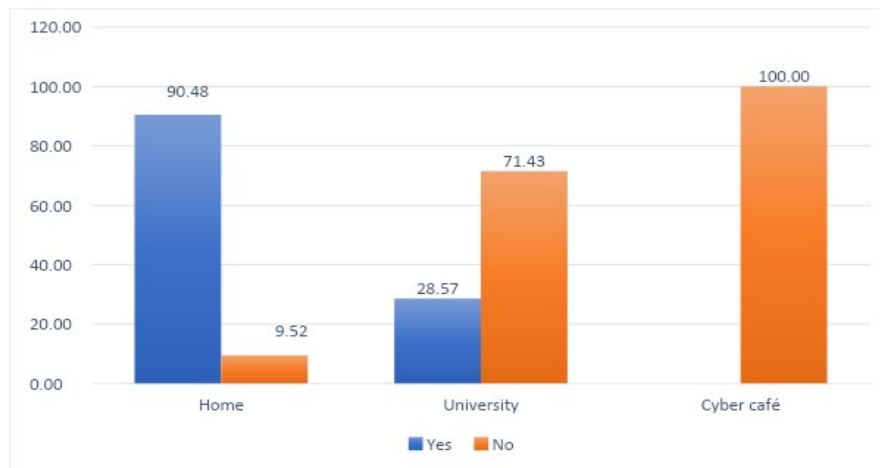


Figure 12. Internet access (%): Location.

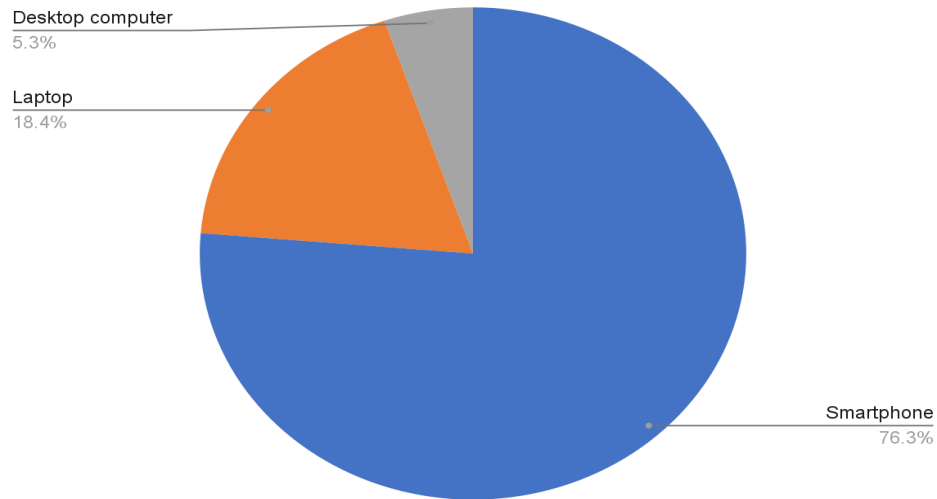


Figure 13. Internet access: Primary device used.

With regards to modes of Internet access, Figure 14 shows that 70.45% of the students use a wireless Internet connection, and 52.27% use mobile data.

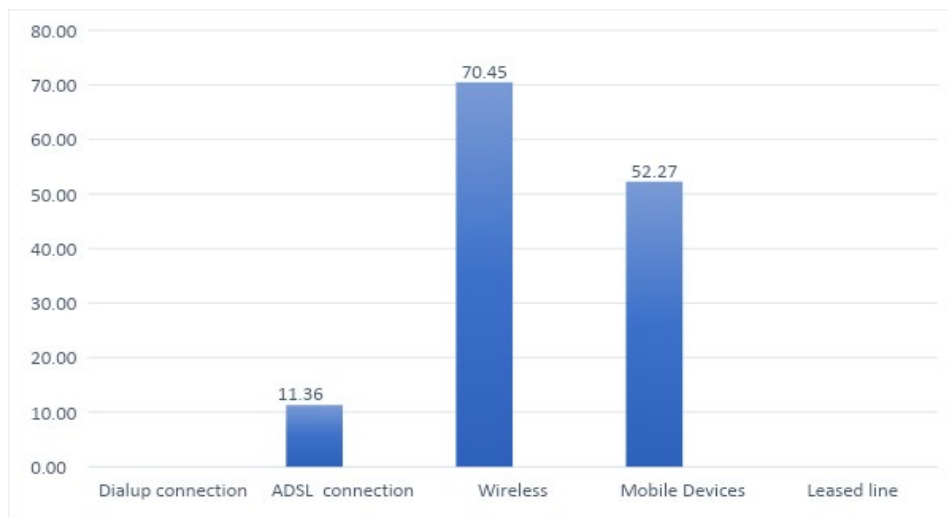


Figure 14. Internet access: Mode.

As shown in Figure 15 (below) the students also stated that they access broadband Internet mainly at home (70.45%) and at the university (34.09%).

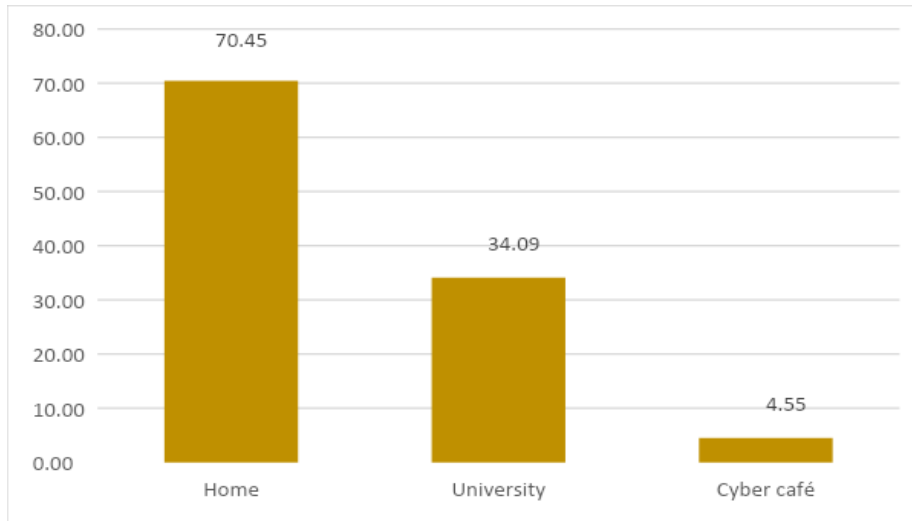


Figure 15. Broadband Internet access.

The broadband connectivity at IUM was most commonly accessed in the classrooms (52.4%), followed by the library (47.62%) and faculty rooms (21.43%). (See Figure 16.)

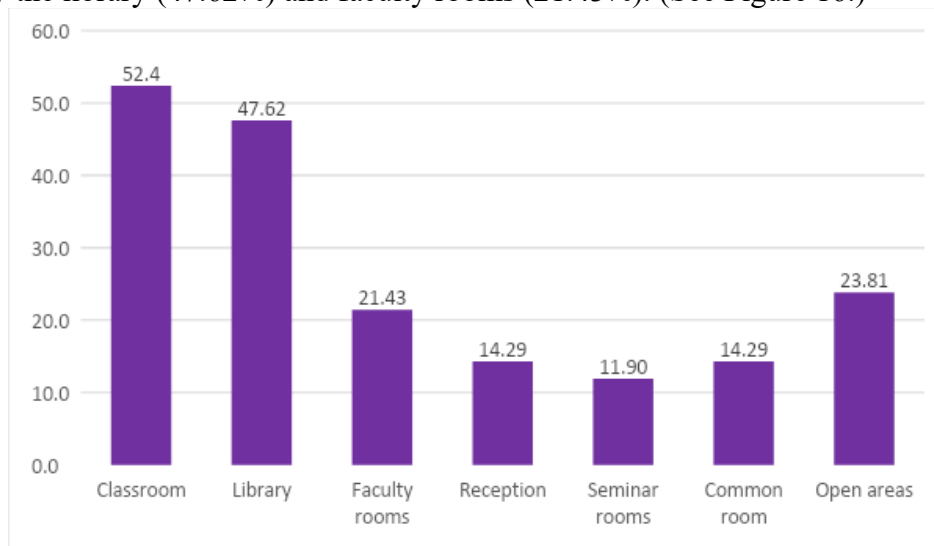


Figure 16. Broadband connectivity within the university (%).

Figure 17 shows that 44.4% of the students spend more than 5 hours on Internet-related activities daily, 41.7% spend 3–5 hours on the Internet and 13.9% spend only 1–2 hours on the Internet.

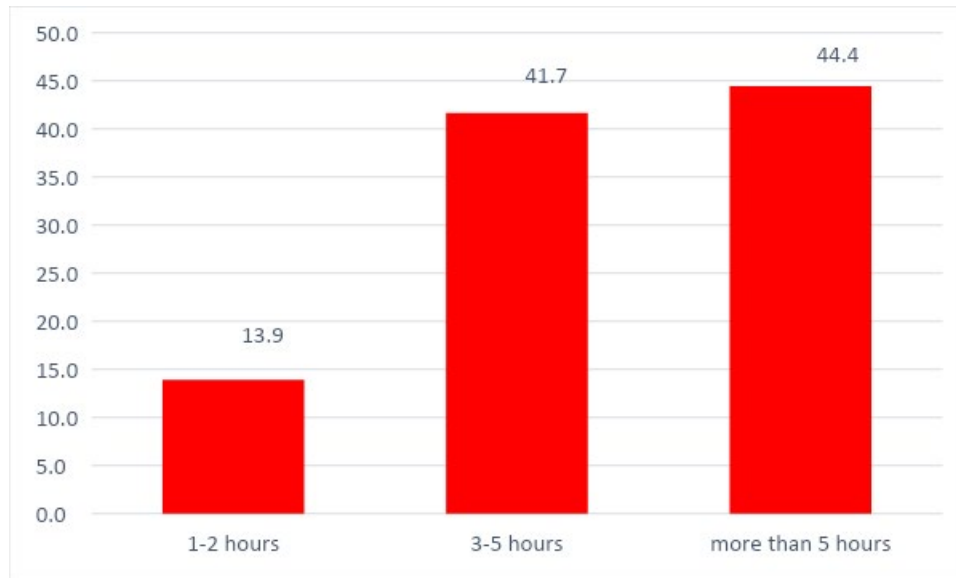


Figure 17. Hours spent on Internet-related activities (%).

4.2.3 Students' ICT skills

The findings of this study indicated that the students use various kinds of technology for learning and research, and their ability to use these technologies varies. The students' skills were rated on a five-point Likert scale, where 1 = I can't use it, 2 = I can use it to a small extent, 3 = I can use it satisfactorily, 4 = I can use it well and 5 = I can use it very well.

Most of the students who participated in the study chose "I can use it very well" for word processors, spreadsheets, PowerPoint, email, databases, search engines and communication platforms. Use of learning management systems, web tools and multimedia authoring were rated overall as "I can use it well." However, skills such as graphic editing, video editing and web page design were rated "I can use it to a small extent." These findings suggest that most of the students are familiar with the technologies that are usually used in teaching and learning such as word processing, PowerPoint, LMSs and search engines. These are mainly used for completing their assessment tasks, and LMSs have been widely used since the early days of the COVID-19 pandemic. (See Table 14.)

Table 14. Students' self-rating in ICT skills

	I can use it very well	I can use it well	I can use it satisfactorily	I can use it to small extent	I can't use it	Weighted means
Word processor (e.g., Microsoft Word)	48.6%	32.4%	16.2%	0.0%	2.7%	4.9
Spreadsheets (e.g., Microsoft Excel)	16.2%	24.3%	29.7%	24.3%	5.4%	4.7
Presentation (e.g., Microsoft PowerPoint)	43.2%	24.3%	24.3%	8.1%	0.0%	5.0
Email	43.2%	24.3%	21.6%	8.1%	2.7%	4.9
Databases	16.2%	10.8%	29.7%	35.1%	8.1%	4.6
Multimedia authoring	13.5%	8.1%	27.0%	27.0%	24.3%	3.8
Graphic editing	13.5%	2.7%	16.2%	16.2%	51.4%	2.4
Digital audio	10.8%	5.4%	18.9%	32.4%	32.4%	3.4
Video editing	2.7%	5.4%	16.2%	24.3%	51.4%	2.4
Webpage design	2.7%	0.0%	10.8%	16.2%	70.3%	1.5
Learning management system (e.g., Moodle)	24.3%	27.0%	21.6%	13.5%	13.5%	4.3
Web 2.0 tools (e.g., Wikis, blogs, social networking)	18.9%	21.6%	16.2%	13.5%	29.7%	3.5
Search engine	35.1%	27.0%	16.2%	10.8%	10.8%	4.5
Communications platform (e.g., MS Teams, Zoom, Google Meet)	41.7%	33.3%	16.7%	5.6%	2.8%	4.9

4.2.4 Social media and technology-enabled resources

Figure 18 (below) shows students' use of social media. The results show that the most popular social media platforms among the students are Facebook (85.7%) and Twitter (45.2%). However, very few use platforms such as Goodreads (9.5%), blogs (14.3%), SlideShare (16.7%) or research-sharing sites (19.0%). This shows that the use of academic social media platforms is very unpopular among students.

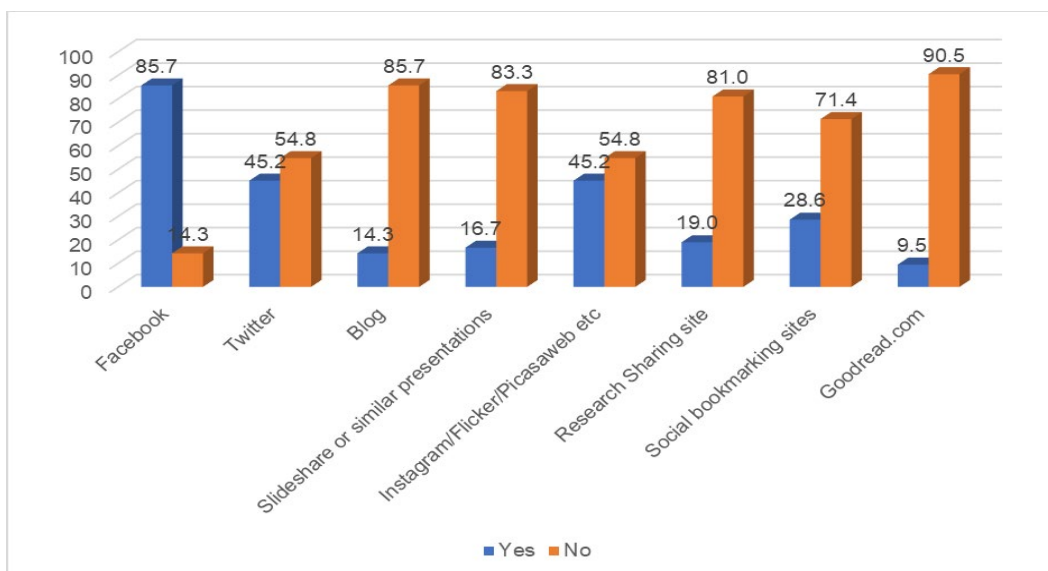


Figure 18. Social media usage (%).

4.2.5 Perceptions of TEL

We asked the students to rate their experience with TEL-related facilities using a five-point Likert scale, where 1 = poor, 2 = fair, 3 = neutral, 4 = good and 5 = excellent. The average weighted score for different activities revealed that learners at IUM had a “good” experience with overall TEL facilities at the university. For example, e-classroom, computer labs, emails, e-portfolios, speed of Internet, Wi-Fi access, online or virtual technologies, access to software, use of free and open-source software, support for maintenance and repair of ICTs, plagiarism detection software and e-journals and e-books were all rated as “good.” The LMS received the highest rating: “excellent.” Facilities that were rated as “fair” included e- newspapers, e-theses, e-proceedings and statistical databases. This clearly indicates that the university needs to improve its e-facilities.

Table 15. Students’ perceptions of the TEL environment

Item	Excellent	Good	Fair	Neutral	Poor	Not available	Weighted average
e-classroom facilities (e.g., computers, projection systems, lecture capture systems, SMART Boards, etc.)	16.2%	21.6%	21.6%	24.3%	10.8%	5.4%	3.91
Computer labs (for practical work and Internet access)	10.8%	29.7%	16.2%	21.6%	13.5%	8.1%	3.78
Email services (institutional)	18.9%	43.2%	10.8%	18.9%	8.1%	0.0%	4.45
Learning management system (e.g., Moodle)	27.0%	40.5%	10.8%	16.2%	5.4%	0.0%	4.67
e-portfolio	5.4%	29.7%	16.2%	29.7%	13.5%	5.4%	3.67
Network bandwidth/speed of Internet (download and upload)	5.4%	29.7%	16.2%	29.7%	13.5%	5.4%	3.67
Wi-Fi access	5.4%	29.7%	10.8%	29.7	24.3	0.0	3.62

Online or virtual technologies (e.g., network or cloud-based file storage system, Web portals, etc.)	8.1%	37.8%	13.5%	27.0%	8.1%	5.4	3.94
Access to software (e.g., MATLAB, GIS applications, statistical software, qualitative data analysis, graphics software, textual or image analysis program, etc.)	8.1%	29.7%	13.5%	32.4%	16.2%	0.0%	3.81
Download and use of free and open-source software for teaching and learning	10.8%	24.3%	16.2%	35.1%	10.8%	2.7%	3.81
Support for maintenance and repair of ICT-related equipment	5.4%	29.7%	13.5%	29.7%	18.9%	2.7%	3.64
Access to data storage	8.1%	29.7%	13.5%	32.4%	10.8%	5.4%	3.75
Data visualisation software	10.8%	18.9%	10.8%	35.1%	13.5%	10.8%	3.45
Citation/reference management software	8.1%	35.1%	13.5%	32.4%	8.1%	5.4%	3.86
Plagiarism detection software	8.1%	37.8%	10.8%	29.7%	10.8%	2.7%	3.94
Institutional repository for sharing of research	5.4%	29.7%	13.5%	32.4%	16.2%	2.7%	3.67
e-journals	5.4%	37.8%	16.2%	21.6%	13.5%	5.4%	3.83
e-books	5.4%	32.4%	21.6%	21.6%	10.8%	8.1%	3.75
Citation databases	5.4%	29.7%	16.2%	24.3%	16.2%	8.1%	3.59
Bibliographic databases	2.7%	35.1%	16.2%	21.6%	16.2%	8.1%	3.62
e-newspapers	5.4%	27.0%	8.1%	29.7%	18.9%	10.8%	3.37
e-theses and dissertations	5.4%	29.7%	13.5%	21.6%	24.3%	5.4%	3.54
Patent databases	2.7%	27.0%	16.2%	27.0%	21.6%	5.4%	3.45
e-proceedings of conferences	5.4%	29.7%	10.8%	27.0%	24.3%	5.4%	3.50
Statistical databases	5.4%	24.3%	8.1%	29.7%	24.3%	8.1%	3.32
Communications platform (e.g., MS Teams)	10.8%	32.4	10.8	24.3	18.9	2.7	3.83

4.3 Summary

The survey's focus was to assess students' experiences of the TEL environment and enabling policies, including access to media and technology, and their use of and preferences for adopting technologies for learning in an educational institution. The data obtained indicated that students access the Internet mainly at home and through their own smartphones. Most students said that they access the Internet via a wireless connection despite the fact that a significant number mentioned that they have a poor wireless connection at the university.

Almost half the students spend more than five hours daily on Internet-related activities and the majority were competent in using basic ICT tools such as a word processor, PowerPoint, email, search engines and learning management systems. However, they stated that they are not familiar with web page design, graphic design and video editing skills. In terms of social media activity, Facebook is by far the most popular social media platform among the students, while academic platforms such as Goodreads, blogs and SlideShare are relatively unpopular.

As an academic institution, the university must conduct awareness campaigns to promote academic social media platforms that will benefit the students in numerous ways. During the COVID-19 pandemic, the switch to remote learning came as a blessing to many students and forced them to undergo rigorous online training in using online tools. It is now up to the university to continue the training, with a stronger focus on the use of academic social media platforms.

5.0 Key Findings and Recommendations

5.1 Key Findings

- The university provides Internet access and Wi-Fi to all its employees and in all its facilities.
- In order to integrate online and blended teaching and learning, it has upgraded many of its classrooms with facilities such as cameras, televisions and computer systems.
- The university needs help to acquire facilities; strengthen infrastructure; and develop, plan and implement policies that support and integrate TEL for teaching and learning.
- Almost all faculty have access to technology such as smartphones, laptops, computers and the Internet. Most faculty mentioned that they use the Internet daily.
- Most faculty are advanced users of word processing, spreadsheets, presentation software, email and LMSs. However, the number of skilled faculty decreases gradually in the areas of Web 2.0 tools, databases, multimedia authoring, graphic editing, video and audio editing and web page design. Faculty and IUM require further training in these areas in order to use TEL effectively.
- Most of the faculty who participated in the survey do not use academic social media sites, though some have accounts with general social media sites, like Facebook and Twitter. This indicates that the majority of IUM faculty are unfamiliar with academic social media platforms.
- In terms of their TEL experience, faculty at IUM had a “good” experience with some services such as the LMS, Wi-Fi and email, and a “fair” or “poor” experience with others such as e-classrooms, computer labs and e-portfolios.
- Despite their lack of knowledge of the principles and advanced ICT skills, the faculty who participated in the survey had some understanding of the use of ICT in teaching and learning.
- The traditional face-to-face teaching method is currently the most popular and preferred way of instruction.
- The majority of the faculty are unaware of ICT policies and OER for teaching and learning.
- Perceptions of TEL among the faculty are promising. Most of the statements about attitudes towards TEL elicited significantly positive responses. Positive responses to the survey can be attributed to certain motivating factors that encourage the use of technology in teaching and learning. Some of these motivating factors include faculty having a personal interest in using TEL, better Internet at the workplace and self-gratification.
- Access to technology, a lack of time to develop e-courses and a lack of instructional design expertise and training are among the strong barriers to implementing TEL identified by the faculty.
- Students gained access to the Internet mainly from home and through their own smartphones.
- Most students revealed that they gain access to the Internet via a wireless connection despite the fact that several of them mentioned having a poor wireless connection at the university.
- The students’ experience with the broadband Internet connection was better in the university classrooms compared to other premises such as the library.

- Almost half of the students spend more than five hours daily on Internet-related activities, and the majority are competent in using basic ICT tools such as word processors, PowerPoint, emails, search engines and LMSs.
- The students stated that they are not familiar with web page design and graphic and video editing skills. They must be trained in advanced ICT skills in order to become successful global citizens in a digital world.
- The majority of the students use Facebook as a social media platform and do not use academic social media platforms such as Goodreads, blogs and SlideShare.
- In general, the students' perceptions of TEL were found to be positive and courses at IUM can build on this to integrate TEL in the courses and use innovative pedagogies.

5.2 Key Recommendations

- Policies and procedures regarding the appropriate use of ICT for teaching and learning at IUM are critical. IUM must create a TEL policy that is in line with the pedagogical standards and long-term requirements of the IUM students.
- Some students and faculty members have adequate access to digital tools, but it is vital that IUM develop its ICT infrastructure, specifically by providing access to high-speed Internet connectivity and open-source software, repositories, etc.
- The focus on building organisational capacity to use ICT for teaching and learning is currently very limited. Hence, IUM should have a long-term plan to develop human capital in the area of technology and also explore opportunities for short-term ICT trainings and workshops to upgrade the existing academic staff. These trainings and workshops should focus on the adoption of advanced digital technologies in teaching and learning.
- There is still a lack of awareness about the available ICT-related facilities and services, therefore it is vital to conduct awareness sessions about these and also about policies related to ICT in teaching and learning. The awareness sessions should include information on MOOC platforms and OER.
- Finally, in order to best serve our students, IUM should adopt a blended strategy for course delivery.

6.0 References

Kirkwood, A., & Price, L. (2016). *Technology-enabled learning implementation handbook*. Commonwealth of Learning. <http://hdl.handle.net/11599/2363>



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