



COMMONWEALTH *of* LEARNING

**Baseline Study of Technology-Enabled
Learning at the National Institute of
Education, Maldives**



NATIONAL
INSTITUTE OF
EDUCATION

Baseline Study of Technology-Enabled Learning at the National Institute of Education, Maldives



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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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Executive Summary

This report presents the results of a baseline survey conducted at the National Institute of Education (NIE) to assess the institution's readiness for technology-enabled learning (TEL), with the ultimate goal of creating a TEL policy and implementing it with the assistance of the Commonwealth of Learning. NIE being the mandated body for in-service teacher education, the report summarises the findings and recommendations resulting from a self-evaluation of its technological facilities and policies, and the preparedness of both teacher educators and in-service teachers to utilise technology in the context of teaching and learning at NIE.

Findings

According to the study, the vast majority of learners (over 95%) and all teacher educators have access to devices and possess basic technological skills. Some of them have more advanced competencies and use more sophisticated technologies. Although social media is commonly accessed, users do not update their profiles regularly. Teacher educators generally have positive experiences with blended and online teaching, but many are not familiar with open educational resources (OER). Both teachers and teacher educators have positive attitudes toward TEL. They are motivated by internal factors, whereas external factors pose barriers and challenges.

Recommendations

- Policy guidelines pertaining to TEL need to be developed in order to facilitate progress and enhance the effectiveness of TEL implementation at NIE.
- Despite the availability of human resources and infrastructure, TEL implementation is still challenged. This is presumed to be related to questions about the quality of courses. It is recommended that these concerns be resolved by developing a suitable learning model specific to the Maldivian context.
- The majority of respondents have access to devices and the Internet, but efforts are needed to reach out to those lacking resources and provide advanced training based on individual needs.
- System capacity building for more advanced competencies is needed. At present, the competency levels of both teachers and teacher educators are limited to the basics.

Chapter 1: Introduction

1.1 Background

The National Institute of Education (NIE) is the professional body of the Ministry of Education responsible for spreading education and improving the quality of learning and teaching in Maldives. NIE is mandated to design and develop school curricula and build the capacity of teachers and school leaders for the proper implementation of the national curriculum. NIE strives to build capacity within the schools by providing on-the-job training for teachers and school leaders through short-term training programmes and accredited qualifications at different levels. These programs are designed to meet the specific needs of teachers across all levels of the school system, including primary, secondary, and higher secondary.

Some of the key areas of focus for in-service teacher education by NIE include developing subject-specific content knowledge, engaging in technology-integrated teaching, and promoting student-centred and inquiry-based teaching approaches. These programmes are developed and delivered by the professional staff working at NIE, who are referred to as “teacher educators” for the purpose of this document. Also, since NIE is the sole provider of in-service training for teachers in the school system, all teachers are considered “learners” of NIE.

1.2 Rationale

Maldives is an idiosyncratic nation comprised of more than 1,190 small islands, spread across 750 km in the Indian Ocean. Since almost 99% of the country is covered by water, sea travel has always been the primary mode of transportation between the islands, which is very costly and time-consuming. It is therefore almost impossible for schoolteachers working on isolated islands to seek professional development while in service. However, with the rapidly developing domain of technology-enabled learning (TEL) in Maldives and the world at large, continuous professional development is appearing to become both cost-effective and time-efficient for Maldives’ isolated in-service teachers. The World Bank’s recent Maldives Development Update (2021) highlights the significant potential and capacity of TEL to enhance access to public services, including education and training, as has been underscored by the Covid-19 crisis. According to the report, the successful implementation of online and televised classes is a case in point, as teachers from all over the country have used their smartphones to create video lessons for telecasting on national television. Therefore, it is essential to review the existing infrastructure and policies that support TEL, understand the perceptions of teacher educators and teachers regarding the use of TEL and analyse the extent to which TEL is used for in-service teacher training. This will pave the way for recommending NIE’s next steps in facilitating the development of TEL for in-service teacher professional development.

NIE has partnered with the Commonwealth of Learning (COL) to evaluate and establish a systematic approach to institutionalising TEL through research, consultation, capacity building, and monitoring and evaluation. As part of these efforts, several activities will be undertaken, including a baseline survey to determine the readiness of the NIE, the teacher educators involved in training in-service teachers, and the teachers. The partnership also involves developing and implementing a

TEL policy and providing capacity-building opportunities for teacher educators to leverage technology for teaching and learning. The purpose of this report is to present the results of the baseline survey, which was conducted to assess the current state of TEL preparedness at NIE before the formulation of a TEL policy.

1.3 Methodology

The baseline study of TEL at NIE draws upon quantitative research, conducted using the survey method to collect data. Three different survey instruments were administered: one to NIE as an institution, another to teacher educators at NIE and the third to schoolteachers across the country. The questionnaires were provided by COL and were contextualised in consultation with COL prior to their implementation. The head of the Technology and Media Department at NIE completed the questionnaire on institutional preparedness on behalf of NIE. This questionnaire aimed to gather essential data regarding existing policies, hardware and software availability, and digital infrastructure readiness for teaching and learning purposes. This information will be helpful in assessing the institution's current digital capabilities and identifying areas that require improvement. Data from schoolteachers were collected online by sending an email to the school principals, with instructions to distribute the online link of the questionnaire among teachers, and to have it completed individually. The teacher educators' form was directly emailed to them with details of how and why their contribution was needed for the study. All teachers and teacher educators completed the questionnaire online.

The online questionnaire was set up so that COL received all the responses, and hence, after the online forms were closed, all three sets of data (institutional, teachers' and teacher educators') were sent to the NIE research team for analysis and report writing.

Invalid/incomplete responses were eliminated from the data set after a process of data screening, leaving 1,781 responses from teachers and 18 responses from teacher educators to be used for data analysis. Since these samples represent over 20% of the teachers and over 30% of the teacher educators, they are considered representative of both populations.

Chapter 2: The TEL Environment at the National Institute of Education

The National Institute of Education is mandated by the Ministry of Education to design and develop school curricula and build the capacity of teachers and school leaders to implement the national curriculum effectively. Due to the country's geographic makeup, technology-enabled learning has been recognised as essential for providing training and support to schools. Since 2015, the main mode of delivering teacher training has been online, with the asynchronous mode being used primarily through the open-source learning management system (LMS) Canvas, by Instructure. However, the Covid-19 pandemic prompted the adoption of synchronous online teaching, and all teachers were trained to teach their students using this method. This development has become an advantage for NIE, enabling it to deliver training using both synchronous and asynchronous methods. Currently, NIE conducts over 80% of its training sessions online.

2.1 The TEL Resources at NIE

NIE has 85 desktop computers, six laptops and eight tablets. The desktop computers are assigned to individual staff and kept in the workstations allocated for each person. Laptops and tablets are looked after by the Department of Technology and Media and can be borrowed by staff who are required to travel elsewhere for training purposes. Sometimes, when numerous staff are required to work away from their desks at the same time, which happens quite frequently, it is difficult to find alternative solutions. One way of addressing this issue is encouraging staff to bring their own mobile devices (laptops and tablets), if required. Since there is no computer lab at NIE, teachers participating in face-to-face training that requires a computer are asked to bring their own devices.

One training room and two meeting rooms are used for training purposes; these have widescreen smart TVs installed, with an Internet connection.

Internet connectivity is provided to NIE by a public company that also happens to be the largest service provider in the country. Although the speed of the Internet at NIE is currently below 1 GBPS, this is accepted as good for the institution's functions. Wi-Fi service is also provided to all staff and is mainly used on smartphones. Staff are allowed to use office resources for the positive use of their own social media accounts. Apart from this, NIE officially uses and maintains a number of social media platforms, such as an official Facebook page, a Twitter handle, a YouTube channel and a number of Viber groups. These platforms are widely used by schoolteachers and the general public, to stay informed about various NIE activities.

There is no official LMS at NIE. However, it uses Canvas very intensively to deliver a number of online courses. Although the Canvas LMS serves the purpose of delivering high-quality online courses, it is a big challenge for NIE teacher educators to solve technical problems that learners face due to the platform not being owned by NIE. A major problem is the inability to retrieve accounts, which leads to learners completely losing their previous work and participation in a course. In addition to Canvas, NIE very commonly uses different tools in G Suite for Education, particularly Google Meet, to deliver online training for teachers.

As NIE is not a regular university with students enrolled to acquire various qualifications, plagiarism testing software, databases and digital libraries are needed only for staff rather than students. However, digital resource production and distribution is one of NIE’s main mandates, and at present, resources are produced and shared through the official YouTube channel, the website and the official social media platforms. There is also a common resource portal established by the Ministry of Education, Filaa Portal,¹ where digital learning resources are produced and shared with teachers.

NIE and the Ministry of Education in general have seen many successful initiatives and achievements through using TEL. However, a significant gap remains, in the absence of a comprehensive policy for ICT in education. Although several concept papers, project proposals and policy guidelines are available, there is a need for a holistic policy that addresses the use of digital resources, the digitisation of curriculum content, capacity building for digital schools, and ensuring cyber safety. With the recent shift towards technology in teaching and learning, it is crucial to develop a specific and comprehensive policy for ICT in education that can guide the transformative pedagogical evolution happening in Maldives.

2.2 TEL Preparedness

The institutional survey required evaluating the readiness for TEL at NIE across several key areas, such as policy and strategic planning, support availability, content creation, leadership and organisational culture, technology availability, and human resource availability. The survey used a scoring system that ranged from 1 to 5, where 1 indicated strong disagreement or non-existence of the item being assessed, and 5 indicated strong agreement or well-established existence. Table 1 presents the results of the survey regarding NIE’s institutional preparedness for TEL.

NIE’s institutional preparedness scores for TEL totalled 110, which falls within the 95–129 range on the score sheet in the *TEL Implementation Handbook* by Kirkwood and Price (2016). This range indicates NIE is in the “developing preparedness” stage, as the institution has already established some components of a TEL system, such as strategic plans and infrastructure, but is still in the process of building a more robust and comprehensive system.

¹ <https://filaa.moe.gov.mv/>

Table 1: Scores on institutional preparedness for TEL

Focus Area	Statement	Score
Policy	There is a well-documented technology-enabled learning policy.	1
	The vision and mission of the technology-enabled learning policy are aligned with the mission of the organisation.	1
	The vision and mission of the technology-enabled learning policy are well understood across the organisation.	1
	There is a commitment on the part of the institutional leaders to use technology to achieve strategic academic goals.	1
The strategic plan	There is a strategic plan for the implementation of technology-enabled learning.	5
	The strategic plan for technology-enabled learning has measurable goals and outcomes.	5
	The strategic plan for technology-enabled learning 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.	4
	There is an ICT policy in place, which is implemented by a high-powered committee in the organisation.	1
	The head of the IT support department reports to senior management and is responsible for 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.	2
Technology	There is adequate hardware infrastructure for teaching and learning (e.g., access to computers for students and learners).	3
	There are adequate applications and software for teaching and learning (e.g., access to appropriate software, intranet, learning management system, etc.).	3
	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 organisation data.	1
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.).	3
	There are instructional designers in the organisation, or faculty members are trained to organise learning content appropriately.	3
	Teachers have adequate access to the online system to develop courses for technology-enabled learning.	3
Documentation	There is a variety of help available to support teachers and students in using technology effectively.	2

Focus Area	Statement	Score
	Lessons learned in the implementation of technology-enabled learning are stored and shared within the organisation for others to access and learn from.	2
	The workflow processes and responsibilities to implement technology-enabled learning are well documented in the organisation.	1
Organisational culture	Faculty and staff members are willing to learn about new technology in the organisation.	5
	Faculty and staff members support each other easily.	4
	There is a culture of knowledge creation and sharing in the organisation.	4
Leadership	Leaders in the organisation are involved in the implementation of technology-enabled learning.	3
	Senior management in the organisation regularly review, monitor and evaluate the progress of technology-enabled learning.	3
	The top leadership of the organisation is supportive of technology-enabled learning and provides encouragement and motivation to the faculty and staff to achieve the academic goals.	3
Human resources and training	Faculty members are qualified and trained to use technology for teaching and learning.	3
	Faculty and staff members receive regular training to update them in the use of technology-enabled learning.	3
	There are adequate staff to support technology-enabled learning.	2
	The organisation has a structure in place to create teams for content development and delivery of technology-enabled learning.	3
	Faculty members trust the support received from instructional designers and technology support staff while developing and delivering the courses.	3
	The IT staff members are highly skilled and trained to provide the needed support.	2
TEL champions	There are early adopters of technology-enabled learning in the organisation.	4
	There are TEL champions in the organisation who support and care about pedagogic innovations.	5
	There are faculty members who can take leadership roles in developing appropriate policies and a technology-enabled learning strategy for the organisation.	3
	There are TEL champions to research and disseminate good practices in technology-enabled learning.	3
Total score		110

Chapter 3: Teacher Educators' Use of Technology for Learning

3.1 Teacher Educators' Profiles

Of the 54 teacher educators working at NIE, only 18 provided accurate responses, yielding a 33% response rate. Nonetheless, this response rate is sufficient to provide a broad overview of teacher educators' access to and use of technology for teaching and learning. Among the respondents, 60% were female, 39% were male and 1% preferred not to answer. A graphical representation of the age distribution of respondents in Figure 1 reveals that the majority of the participants fell in the age range of 31 to 60. The highest stated qualification of all the respondents was a master's degree.

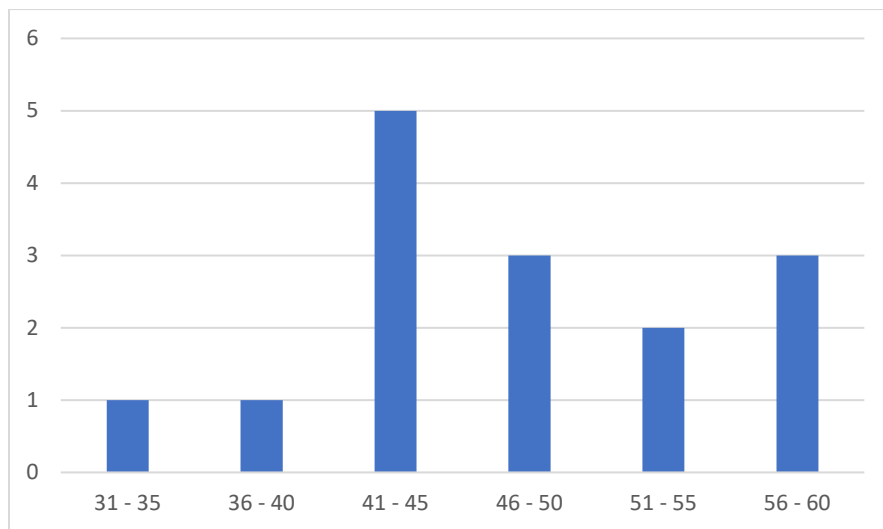


Figure 1: Age distribution of teacher educators.

3.2 Access to and Use of ICT

3.2.1 Access to Devices

All teacher educators working at NIE are provided with personalised desktop computers with high-speed Internet. All respondents also indicated owning either a laptop or a desktop computer, and 100% owned smartphones. Table 2 illustrates that 28% of the respondents also owned tablets.

Table 2: Percentage access to devices

	Device	%
Owning a computer	desktop	61
	laptop	89
Owning a mobile device	smartphones	100
	tablets	28

3.2.2 Access to the Internet

According to Table 3, every teacher educator reported having Internet access both at work and at home. While in the office, all teacher educators are provided with access to broadband Internet on their desktop computers, as well as wireless connectivity for their personal devices, including laptops and smartphones. At home, 89% of the teacher educators reported having wireless access, followed by 83% who had mobile data access. Additionally, 38% reported having an ADSL connection at home. When it comes to the devices most commonly used to access the Internet, 83% used smartphones, while 17% used desktop computers. When asked about their frequency of accessing the Internet, 100% reported using the Internet daily.

Table 3: Teacher educators' ways of accessing the Internet

Place of access	home	100%
	office	100%
Type of connectivity	ADSL connection	38%
	wireless	89%
	mobile devices	83%
Most frequently used device	smartphone	83%
	desktop computer	17%

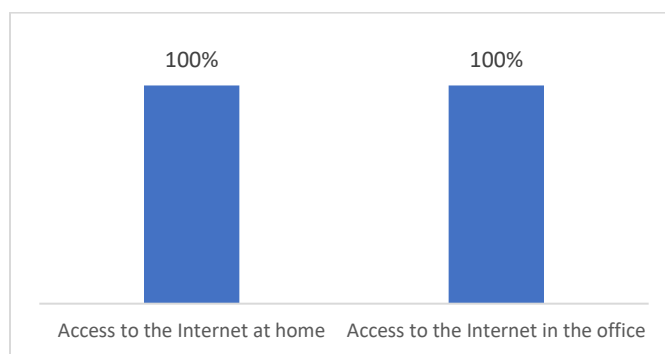


Figure 2: Access to the Internet.

3.2.3 Use of ICT

Table 4 indicates teacher educators' level of expertise in the use of ICT. Over 83% of teacher educators indicated having competency at an intermediate user level or above in using word processors, spreadsheets, presentations and emails. However, when it came to more sophisticated ICT skills such as graphic editing, web designing and video editing, most of the teacher educators indicated being non-users, as presented in Table 4. Those who indicated engaging in these activities mostly rated themselves at a basic or intermediate level.

Table 4: Teacher educators' skills in computer-related activities

Competencies	Percentage Rating					Weighted Mean
	Trainer	Advanced user	Intermediate user	Basic user	Non-user	
Word processor	11.11	33.33	44.44	11.11	0.00	2.44
Spreadsheets	11.11	38.89	33.33	16.67	0.00	2.35
Presentation	16.67	27.78	44.44	11.11	0.00	2.50
Email	22.22	27.78	33.33	16.67	0.00	2.56
Databases	0.00	23.53	23.53	35.29	17.65	1.53
Multimedia authoring	0.00	6.25	31.25	43.75	18.75	1.25
Graphic editing	0.00	0.00	31.25	18.75	50.00	0.81
Digital audio	0.00	6.25	31.25	31.25	31.25	1.13
Video editing	0.00	6.25	25.00	31.25	37.50	1.00
Webpage design	0.00	0.00	20.00	33.33	46.67	0.73
Learning management system	0.00	17.65	29.41	29.41	23.53	1.41
Web 2.0 tools	0.00	23.53	17.65	35.29	23.53	1.41
Communications platform	0.00	0.31	12.50	37.50	18.75	1.56

100% of the respondents indicated having a social media account. Figure 3 shows that Facebook was the most commonly used social media platform, followed by Twitter, with 89% and 71% of teacher educators having active accounts, respectively. Although some people used their Facebook and Twitter accounts for information exchange and social learning, the majority used them for personal social networking. The findings also revealed that quite a significant number of teacher educators, 61%, used research-sharing sites such as Academia and ResearchGate, presumably for their work related to curriculum design. However, only 7% of respondents updated their social media profile several times a day, and only 18% engaged with social media on a daily basis. The least used type of social media platform, according to the findings, was the blog, used by only 11% of the teacher educators.

The analysis of how active the teacher educators were on social media demonstrated that quite a significant number, 41%, updated their social media status several times a day, while 12% updated once a week or fortnight. However, a significant percentage of teacher educators, 41%, did not change their social media status at all (see Figure 4).

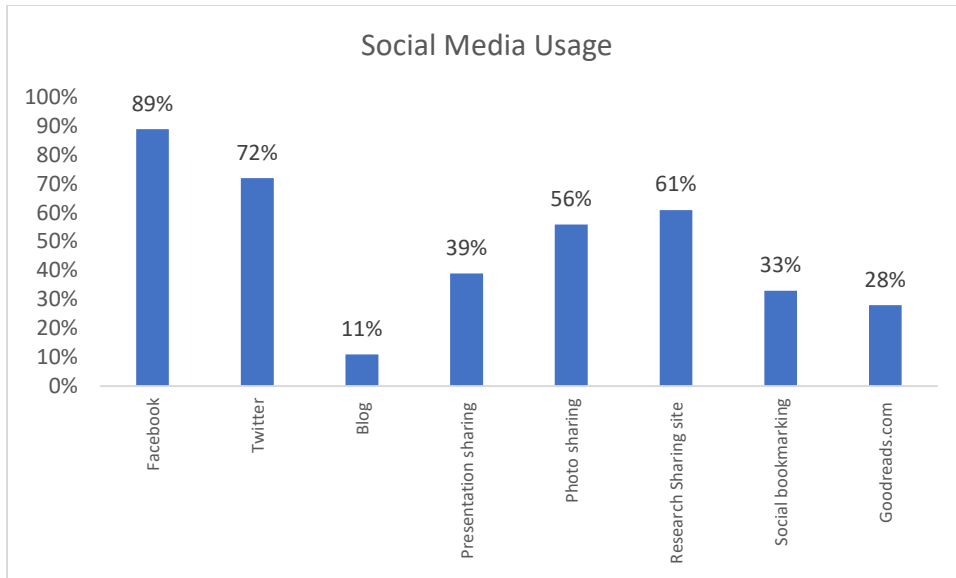


Figure 3: Social media usage by teacher educators.

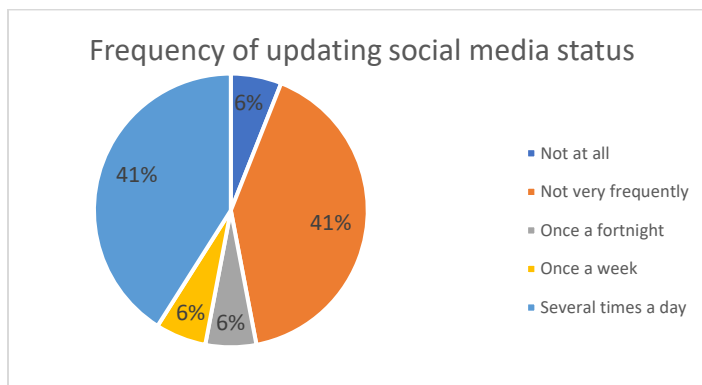


Figure 4: Frequency of teacher educators updating social media status.

3.2.4 Mailing Lists and Discussion Forums

Thirty-nine per cent of the teacher educators confirmed their membership in mailing lists and discussion forums (Table 5). However, when other questions about subscriptions to mailing lists and discussion forums were analysed, several inconsistencies and missing values appeared, as presented in the table. It is hence presumed that some teacher educators who responded to this section of the questionnaire were not familiar with the concepts of mailing lists and discussion forums.

Table 5: Involvement in mailing lists and discussion forums

Member of a mailing list or discussion forum	Email-based discussion forums subscribed to	Moderating discussion forums or mailing lists	
		Yes	No
7	39%	11	3
		6	3

3.2.5 Access to and Use of Institutional ICT Resources

Table 6 presents the teacher educators' weighted average rating of their experiences with the resources/services/spaces provided by NIE, on a Likert scale where 1 = poor, 2 = fair, 3 = neutral, 4 = good, 5 = excellent and 0 = not available. The results indicate that the majority of teacher educators have had positive experiences when using the resources provided by NIE, with a mean weighted average of 2.93. Email services, Wi-Fi access and Internet speed were the highest-rated services, while access to software and e-portfolios were rated lowest. While an e-portfolio is not a formal service provided by NIE for teacher educators, access to different software needs to be provided, based on the kinds of responsibilities assigned to individual teacher educators.

Table 6: Weighted mean of teacher educators' perceived access to resources

Resources	Percentage Rating						Weighted Mean
	Excellent	Good	Neutral	Fair	Poor	Not available	
E-classroom facilities	5.88	35.29	17.65	11.76	5.88	23.53	2.53
Computer labs	5.88	29.41	23.53	11.76	11.76	17.65	2.53
Email services	17.65	76.47	0.00	5.88	0.00	0.00	4.06
Learning management system	5.88	41.18	17.65	0.00	17.65	17.65	2.65
E-portfolio	6.25	18.75	31.25	0.00	25.00	18.75	2.25
Bandwidth and speed of Internet	5.88	64.71	11.76	17.65	0.00	0.00	3.59
Wi-Fi access	17.65	58.82	23.53	0.00	0.00	0.00	3.94
Online or virtual technologies	11.76	35.29	29.41	5.88	17.65	0.00	3.18
Access to software	5.88	11.76	35.29	0.00	23.53	23.53	2.06
Download and use of free and open-source software	0.00	47.06	23.53	11.76	5.88	11.76	2.88
Support for maintenance and repair	0.00	17.65	52.94	17.65	11.76	0.00	2.59

3.3 Using ICT for Teaching and Learning

This section presents an analysis of how NIE's teacher educators use ICT in their training. The respondents were asked to identify the kind of classes they teach, how frequently they use different kinds of ICT resources, and their practices of creating and sharing resources. According to the responses, 61% of the teacher educators used blended teaching, while 28% took completely online classes. Since traditional face-to-face training is still available, 50% remained involved in face-to-face classes, as presented in Figure 5.

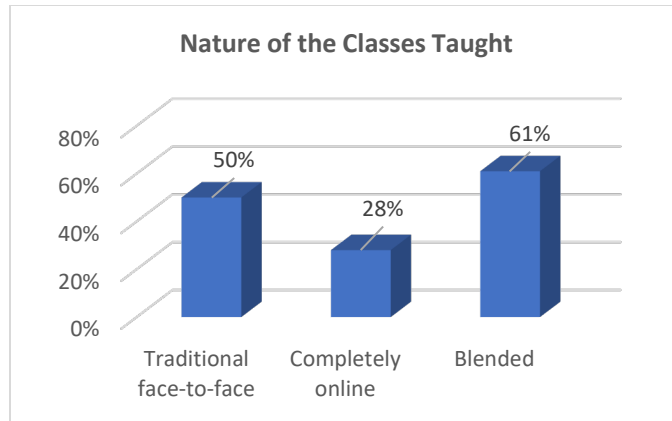


Figure 5: Types of classes taught.

The respondents were asked to rate the frequency of their use of different ICT resources based on a Likert scale from 1 to 5, where 1 = never, 2 = rarely, 3 = sometimes, 4 = often and 5 = always. Table 7 presents the weighted average of teacher educators' use of the given digital resources. According to the results, teacher educators use presentations, Word files, images and video resources the most frequently. These findings also indicate the need for them to use important digital resources such as the LMS, social bookmarking and open textbooks more often.

Table 7: Usage of digital resources by teacher educators

Resources	Percentage Rating					Weighted Mean
	Always	Often	Sometimes	Rarely	Never	
Images	57.14	14.29	21.43	7.14	0.00	3.21
Presentations	64.29	14.29	21.43	0.00	0.00	3.43
Word files	57.14	28.57	7.14	7.14	0.00	3.36
Digital films/video	28.57	50.00	14.29	7.14	0.00	3.00
Audio recordings	15.38	15.38	53.85	15.38	0.00	2.31
Simulations and 2D/3D animations	7.14	14.29	21.43	35.71	21.43	1.50
Learning management system	7.69	23.08	7.69	30.77	30.77	1.46
Blogs	0.00	7.69	7.69	61.54	23.08	1.00
Social bookmarking	7.69	7.69	23.08	46.15	15.38	1.46
Microblogging	0.00	23.08	30.77	23.08	23.08	1.54
Open textbooks	7.14	14.29	50.00	21.43	7.14	1.93
Open-access research papers	21.43	7.14	50.00	14.29	7.14	2.21

The next two questions on the use of ICT resources were about the teacher educators' awareness of OER and how to create and share digital teaching and learning materials through licensing. The results revealed that 59% were aware of OER (Figure 6). According to the results, a very small percentage of teacher educators create and share their resources through open licensing, indicating the need for more training and advocacy in these areas. The results also revealed that simulations

and 2D/3D animations are the least created and shared resources (Figure 7).

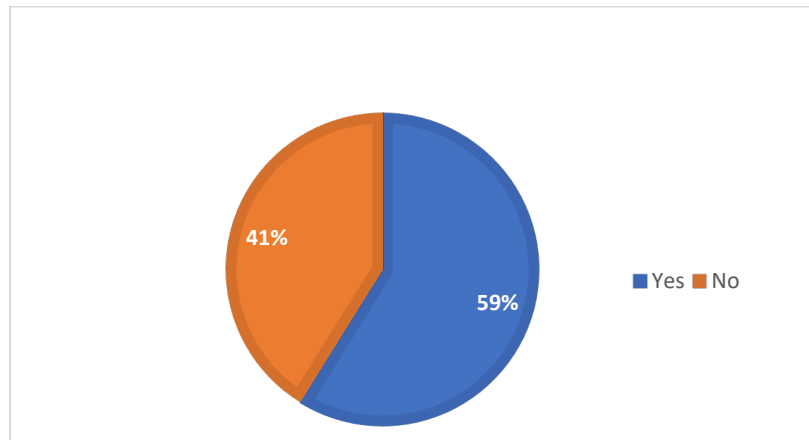


Figure 6: Awareness of OER.

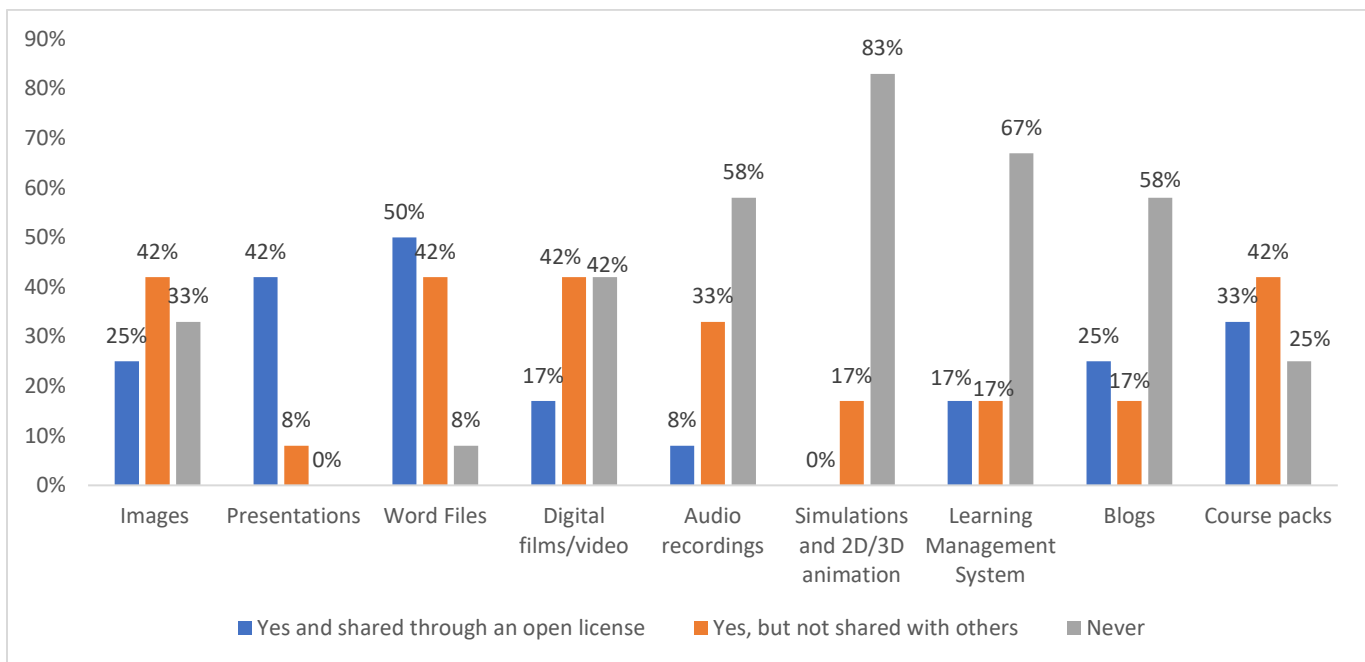


Figure 7: Habits of creating and sharing teaching and learning resources.

To determine how much of the commonly used technologies are integrated in teaching, the respondents were asked to rate their practices using a five-point Likert scale. The responses show that teacher educators did not have a strong belief in their abilities to use most of the resources. They were most comfortable with using online collaboration tools and eBooks. Table 8 presents the mean weighted averages of how comfortable teacher educators are in using a range of ICT.

Table 8: Skills for Integrating Technologies in Teaching and Learning

Tools	Percentage Rating					Weighted Mean
	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	
Learning management system	0.00	8.33	33.33	41.67	16.67	1.33
Online collaboration tools	25.00	25.00	16.67	25.00	8.33	2.33
E-portfolio	0.00	8.33	16.67	25.00	41.67	0.91
eBooks	8.33	33.33	33.33	25.00	0.00	2.25
Online video/audio	8.33	33.33	16.67	33.33	8.33	2.00
Games and simulations	8.33	25.00	25.00	41.67	0.00	2.00
Lecture capture tools	8.33	16.67	16.67	41.67	16.67	1.58
Accessible tools	0.00	16.67	8.33	41.67	33.33	1.08
Social media	0.00	25.00	8.33	50.00	16.67	1.42
Communication platforms	8.33	16.67	8.33	50.00	16.67	1.50

3.4 Training and Staff Development

NIE continuously provides training for the staff based on their needs, including training on the use of new technologies. Although 100% of respondents agreed this happens, 67% indicated having received training on the use of ICT in teaching and learning; 78% said they had participated in online training, while 44% indicated participating in MOOCs, as illustrated in Figure 8.

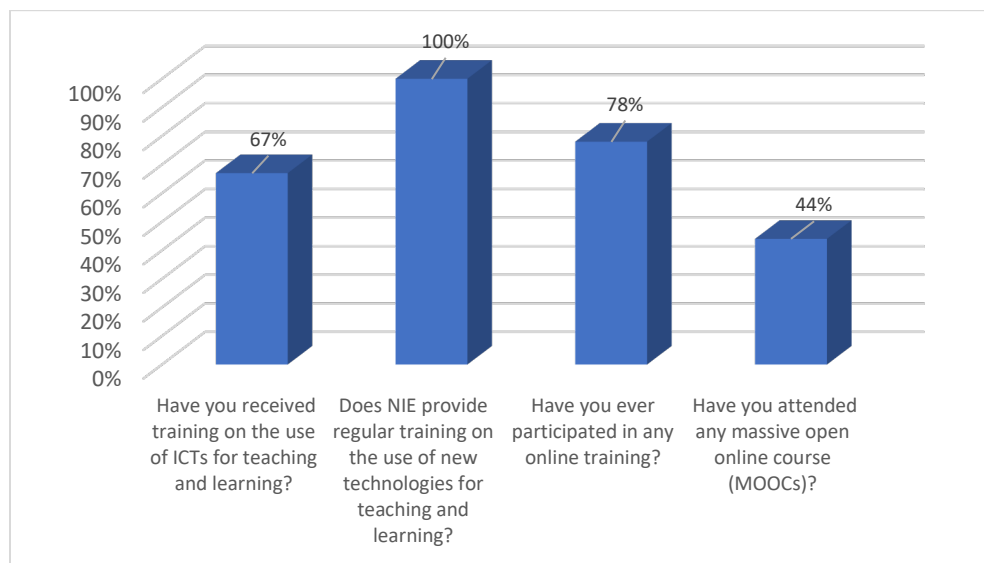


Figure 8: Training and staff development.

3.5 Perceptions about Using Technology-Enabled Learning

This section explores the teacher educators' perceptions of TEL's impact on teaching and learning, by assessing their attitudes, what motivates them and what they see as barriers to using TEL.

Table 9 presents their attitudes towards TEL, revealing an extremely positive attitude with a very insignificant level of negative or neutral responses. It is therefore presumed that teacher educators believe using TEL would solve many educational problems, provide new opportunities, increase access to quality teaching and learning materials, foster collaborative learning and improve student engagement.

Table 9: Attitudes toward TEL

Statements	Percentage Agreement			Weighted Mean
	Agree (2)	Disagree (0)	Neutral (1)	
TEL can solve many of our educational problems	94.12	0.00	5.88	1.89
TEL will bring new opportunities for organising teaching and learning	94.12	0.00	5.88	1.89
TEL saves time and effort for both teachers and students	100.00	0.00	0.00	1.94
TEL increases access to education and training	94.12	5.88	0.00	1.83
TEL increases my efficiency in teaching	87.50	0.00	12.50	1.82
TEL enables collaborative learning	82.35	11.76	5.88	1.67
TEL can engage learners more than other forms of learning	76.47	11.76	11.76	1.61
TEL increases the quality of education as it integrates all forms of media	88.24	5.88	5.88	1.78
TEL increases the flexibility of teaching and learning	87.50	6.25	6.25	1.76
TEL improves communication between students and teachers	81.25	0.00	18.75	1.76
TEL enhances the pedagogic value of a course	81.25	6.25	12.50	1.71
TEL for the benefit of their students	87.50	6.25	6.25	1.76

Table 10 presents the data on what motivates teacher educators to use technology-enabled learning. According to the results, personal interest, intellectual challenge, self-gratification, peer recognition, improved infrastructure and reduced workload emerged as the main motivators, while better bandwidth, Credit towards promotion, and technical support were considered comparatively less significant. However, it is fair to conclude that almost all the factors listed play a role in motivating individual teacher educators to adopt TEL.

Table 10: Motivators to use TEL

Motivators	Percentage Rating					Weighted Mean
	Very strong motivator	Strong motivator	Average motivator	Weak motivator	Very weak motivator	
Personal interest in using technology	43.75	43.75	12.50	0.00	0.00	4.31
Intellectual challenge	43.75	37.50	18.75	0.00	0.00	4.25
Self-gratification	43.75	31.25	25.00	0.00	0.00	4.19
Training on TEL	37.50	31.25	25.00	6.25	0.00	4.00
Better Internet bandwidth	25.00	25.00	18.75	31.25	0.00	3.44
Credit towards promotion	28.57	28.57	14.29	28.57	12.50	3.25
Professional incentives to use TEL	33.33	26.67	33.33	6.67	6.25	3.69
Technical support	26.67	26.67	20.00	26.67	6.25	3.38
Peer recognition, prestige and status	43.75	25.00	31.25	0.00	0.00	4.13
Improved infrastructure	25.00	50.00	12.50	12.50	0.00	3.88
Reduction in workload	37.50	37.50	25.00	0.00	0.00	4.13
To be a trendsetter	43.75	18.75	31.25	6.25	0.00	4.00

Teacher educators' perceived barriers to TEL were investigated using a Likert scale, where 1 = very weak barrier, 2 = weak barrier, 3 = average barrier, 4 = strong barrier and 5 = very strong barrier.

Table 11 presents the data on percentage ratings and weighted averages for individual barriers. According to the results, inadequate availability of hardware and software, lack of time to develop e-courses, no role models to follow, concern about the quality of e-courses and concern about students' access to technology are the biggest barriers to TEL at NIE.

Table 11: Barriers to using TEL

No.	Barriers	Percentage Rating					Weighted Mean
		Very strong	Strong	Average	Weak	Very weak	
1	Concern about students' access to technology	16.67	61.11	0.00	5.56	0.00	3.07
2	Lack of training on TEL	11.11	50.00	0.00	22.22	0.00	2.60
3	Lack of technical support in the university	16.67	38.89	0.00	27.78	0.00	2.53
4	Lack of institutional policy for TEL	16.67	55.56	0.00	5.56	5.56	2.87
5	Lack of professional prestige	16.67	38.89	0.00	11.11	16.67	2.33
6	Concern about the quality of e-courses	27.78	44.44	0.00	11.11	0.00	3.07
7	Lack of incentives to use TEL	11.11	50.00	0.00	16.67	0.00	2.71
8	Lack of credit towards promotion	22.22	27.78	0.00	33.33	0.00	2.47
9	Intimidated by technology	16.67	27.78	0.00	27.78	5.56	2.29
10	Concern about security issues on the Internet	16.67	44.44	0.00	16.67	5.56	2.60
11	Inadequate availability of hardware and software	44.44	27.78	0.00	11.11	0.00	3.27
12	Poor Internet access and networking in the university	16.67	44.44	0.00	22.22	0.00	2.67
13	Lack of time to develop e-courses	38.89	38.89	0.00	5.56	0.00	3.33
14	Lack of instructional design support for TEL	22.22	50.00	0.00	5.56	5.56	2.93
15	No role models to follow	33.33	38.89	0.00	11.11	0.00	3.13

3.6 Summary

Teacher educators are equipped with the necessary devices and basic competencies to deliver TEL training, and they generally have a very positive attitude towards TEL. However, it is also evident that they need training on TEL to build their capacity to use more advanced technologies for teaching and learning.

Chapter 4: In-service Teachers' Use of Technology for Their Continuous Professional Development

4.1 Demographic Information

4.1.1 Gender and Age

As noted earlier in this report, NIE is the central body mandated to provide in-service teacher training to teachers in Maldives' schools. Hence, for the purpose of this study, in-service teachers are considered learners at NIE. Among the learners who participated in the study, 23% were male and 73% were female (Figure 9). Teachers were categorised into six different age groups, among which the largest proportion (28.4%) were 41 years and above; 41.7% were above 30, and only 1.3% were below 20 (Figure 10).

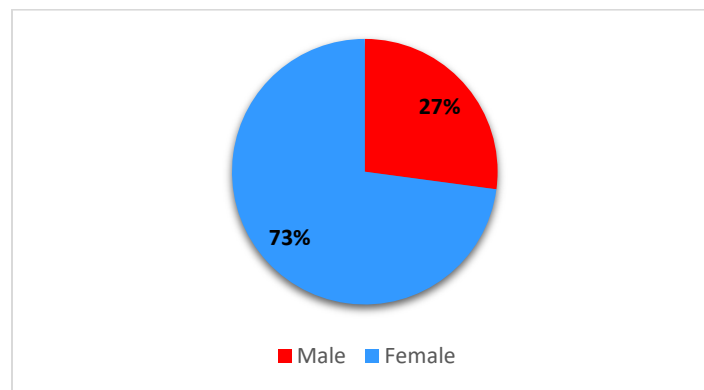


Figure 9: Percentage distribution of respondents' gender.

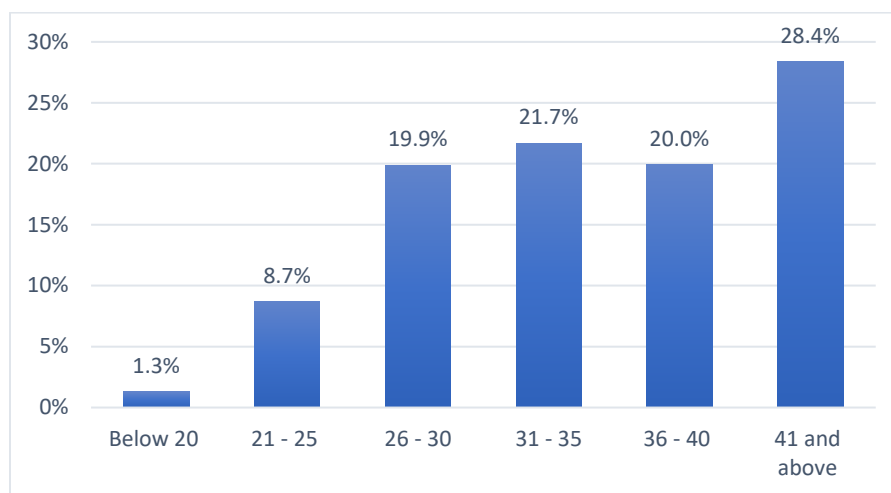


Figure 10: Percentage distribution of respondents' age groups.

4.1.2 Level of Study and Years of Teaching Experience

The study results showed that a high percentage of respondents (78%) were graduate or postgraduate teachers; this aligns with records indicating that in Maldives, many teachers have a master's degree (Figure 11). With respect to teaching experience, most teachers (48.25%) had more than ten years of experience, and 16.4% had one to three years (Figure 12).

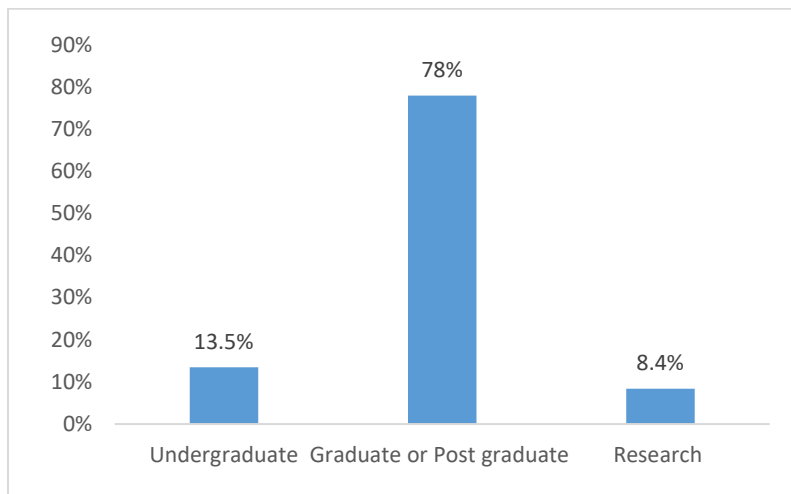


Figure 11: Distribution of respondents' levels of study.

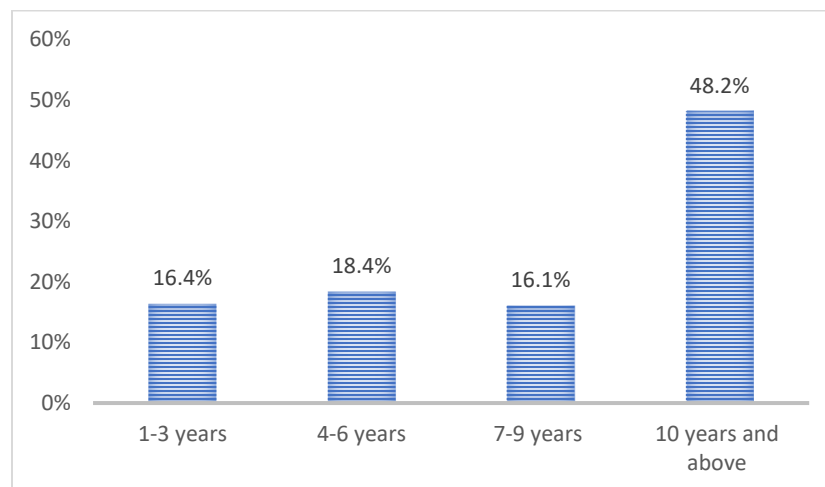


Figure 12: Distribution of respondents' years of teaching experience.

4.2 Ownership of and Access to ICT

4.2.1 Ownership of Laptops or Desktop Computers

Among the respondents, a very high percentage (96.8%) owned a laptop or a desktop (Figure 13).

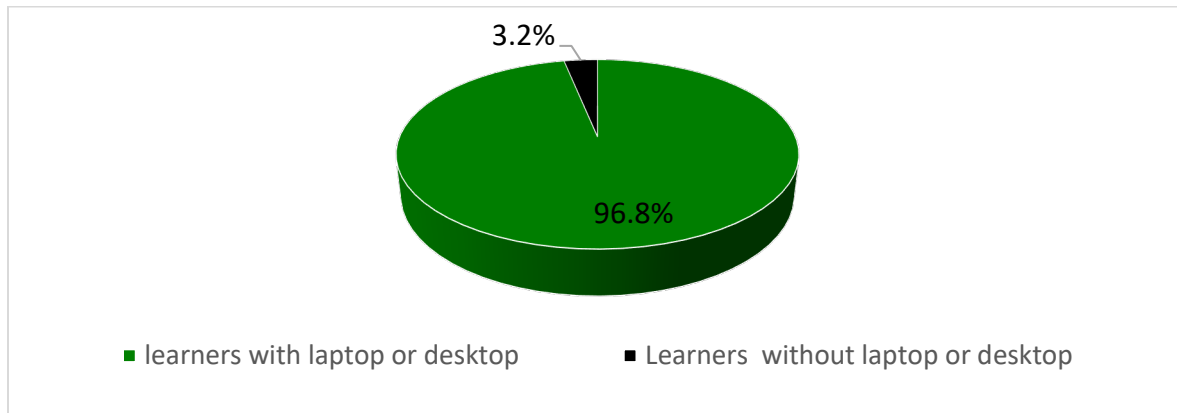


Figure 13: Ownership of laptop or desktop.

4.2.2 Ownership of Smartphones

Among the respondents, a very high percentage (97%) owned smartphones (Figure 14). This is unsurprising, as most people in Maldives have smartphones.

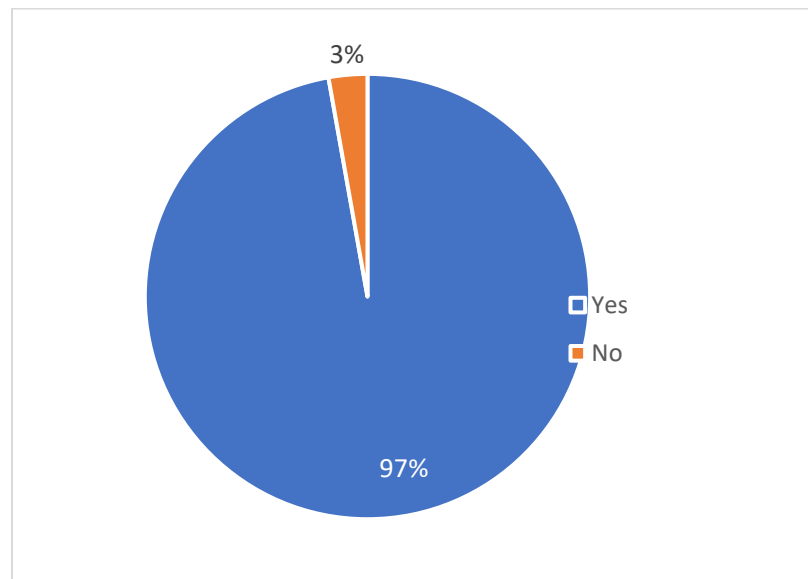


Figure 14: Ownership of smartphones.

4.2.3 Ownership of Tablets

Among the respondents, 58% indicated they owned a tablet (Figure 15). It is important to note that

the Ministry of Education has given tablets to all teachers; hence, some of the teachers might consider these to be items they own, whereas others might think of them as items they access but that are government property.

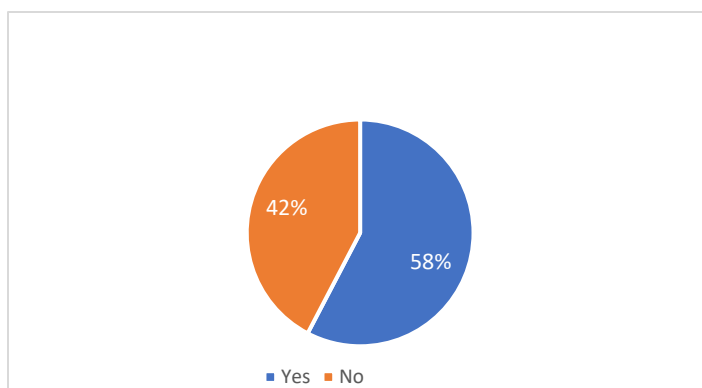


Figure 15: Ownership of tablets.

4.2.4 Access to Devices at School

Exploration of learners’ access to devices at school revealed that 75.2% of teachers were provided with desktops by the school, while 16.5% said laptops were provided by the school. However, high percentages (79.4% and 70.6%) used their personal smartphones and laptops, respectively, at school. As noted above, the Ministry of Education has provided tablets to all teachers (and students), which is also highlighted by 69.3% of teachers saying that tablets were provided by the school.

Table 12: Teachers’ access to devices at school

	Yes, provided by the school	Yes, I use my personal device in the school	No, my school does not allow me to use these
Desktop	75.2%	13.0%	5.6%
Laptop	16.5%	70.6%	5.9%
Smartphone	6.2%	79.4%	6.8%
Tablet	69.3%	10.4%	10.3%

4.2.5 Accessing the Internet at Home and School

All of the households in Maldives have Internet packages, and Internet access is provided to government schools. Findings also revealed that 90% of the respondents had access to the Internet at home and 90% had access at school (see Figures 16 and 17).

4.2.6 Accessing the Internet through Wi-Fi and Mobile Devices

The responses showed that 76.2% had access to the Internet through mobile devices and 69.7% through Wi-Fi (Figures 18 and 19).

4.2.7 Frequently Used Devices to Access the Internet

A high percentage (76%) of respondents used smartphones to access the Internet (Figure 20). This finding supports the general observation that almost everyone in Maldives has a smartphone that can access the Internet. Only 1% of learners used a tablet or iPad to access the Internet. This also supports the observation that even though tablets are given to teachers, most of the time these are not used for Internet access.

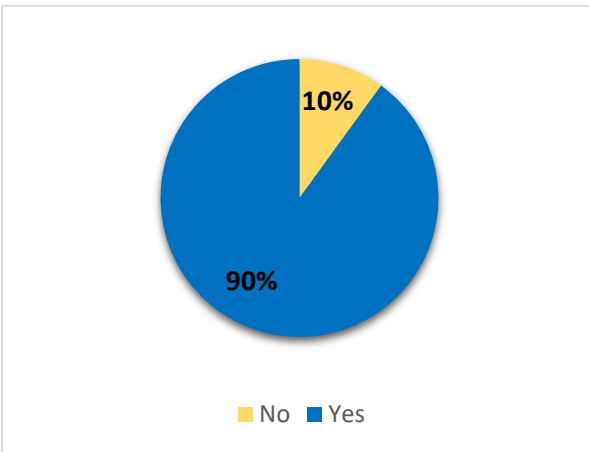


Figure 16: Distribution of respondents having access to the Internet at home.

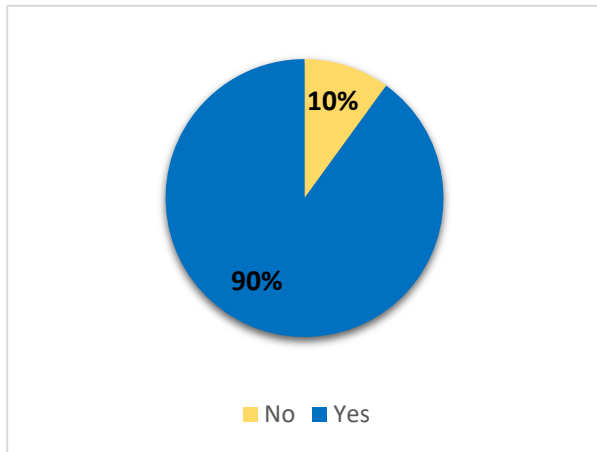


Figure 17: Distribution of respondents having access to the Internet at school.

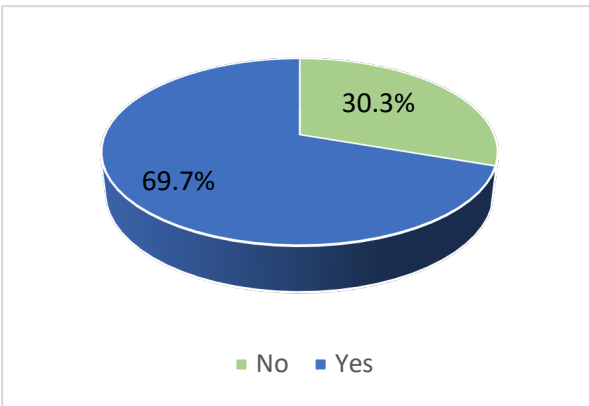


Figure 18: Distribution of respondents having access to the Internet through Wi-Fi.

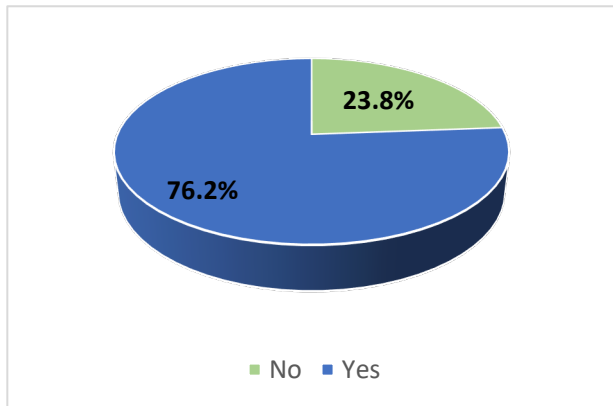


Figure 19: Distribution of respondents having access to the Internet through mobile devices.

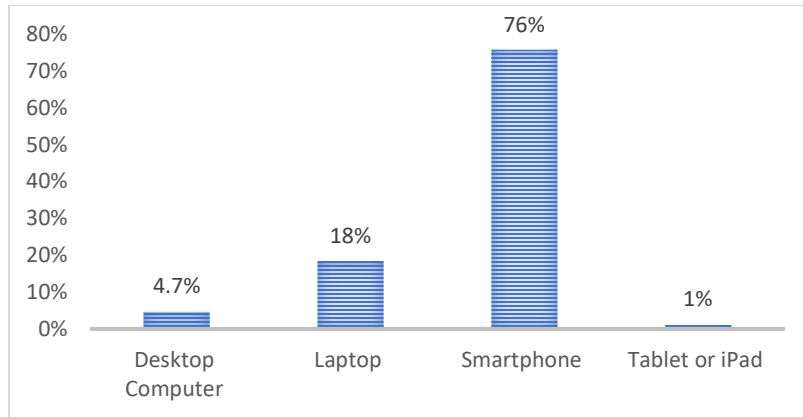


Figure 20: Distribution of devices respondents use frequently to access the Internet.

4.2.8 Internet Usage

Almost all respondents (95.8%) used the Internet daily (Figure 21), with very small percentages using it on alternate days or once a week (1.4% and 1.0%, respectively).

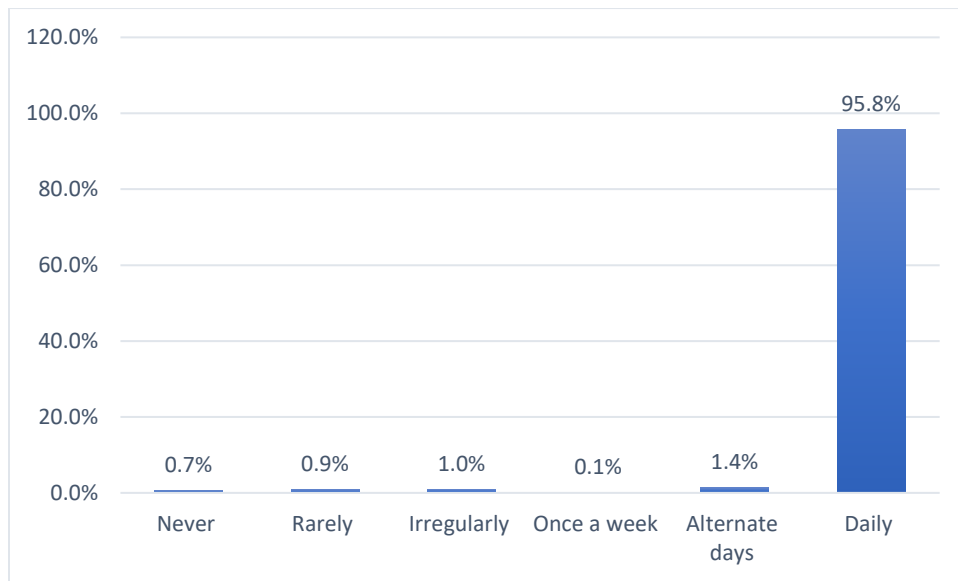


Figure 21: Distribution of respondents' Internet usage.

4.2.9 Average Time Spent on Internet-Related Activities

The largest proportion of the respondents (38.9%) spent an average of three to five hours daily on Internet-related activities daily, while 28.0% spent one to two hours per day, and 25.4% spent more than five hours a day. Only 0.8% did not engage in Internet-related activities daily.

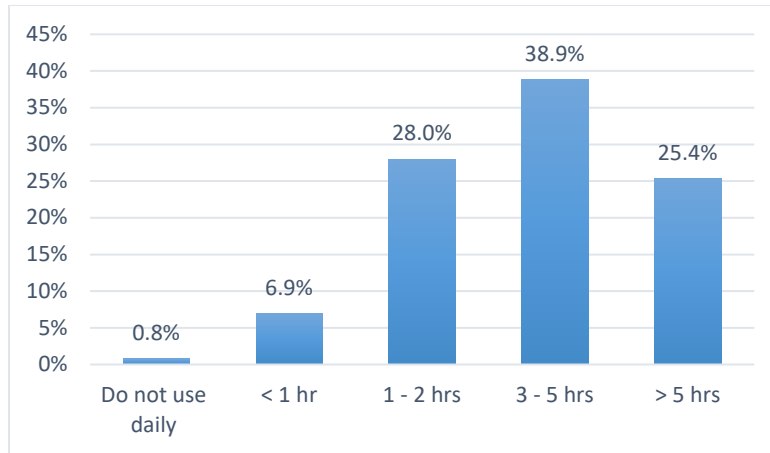


Figure 22: Respondents' average time spent on Internet-related activities.

4.3 Use of ICT

4.3.1 Skills in Computer-Related Activities

When looking into the skills for various computer-related activities, respondents indicated having a satisfactory ability to use emails, word processors and presentations, with mean values of 3.31, 3.22 and 3.19, respectively, on a 0–4 rating scale (Table 13). In general, teachers used word processors such as Microsoft Word to prepare worksheets and exam papers, and presentation software such as PowerPoint to create presentations for teaching and learning. All teachers at government schools have official email addresses created by the schools and frequently use them for email communications. Teachers also indicated that they can satisfactorily use communication platforms such as Google Meet, Google Classroom, etc. During the Covid-19 pandemic lockdown, with school closures on some islands as well as in the capital city Malé, classes were taken online through Google Meet and Google Classroom. The Ministry of Education also made it mandatory for all teachers to participate in the Google for Education certificate course. Hence, after Covid-19, pandemic teachers were familiar with these communication platforms. The lowest mean (0.85) was for webpage design, a skill not commonly used in teaching and learning; only people with advanced ICT skills typically engage in this activity.

Table 13: Teachers' skills in computer-related activities

	I can't use it	I can use it to a small extent	I can use it satisfactorily	I can use it well	I can use it very well	Weighted Mean
Word processor (e.g., Word)	1.58%	2.70%	13.18%	37.33%	45.21%	3.22
Spreadsheets (e.g., Excel)	3.05%	11.91%	25.01%	36.02%	24.00%	2.66
Presentation (e.g., PowerPoint)	1.35%	3.38%	14.49%	36.75%	44.02%	3.19

Email	1.52%	2.37%	10.94%	34.39%	50.79%	3.31
Databases	13.98%	19.97%	27.04%	26.93%	12.09%	2.03
Multimedia authoring	17.64%	20.15%	28.65%	23.63%	9.93%	1.88
Graphic editing	32.93%	29.40%	22.91%	10.48%	4.27%	1.24
Digital audio	25.04%	28.35%	23.56%	16.14%	6.90%	1.52
Video editing	33.73%	27.30%	20.36%	12.68%	5.92%	1.30
Webpage design	51.17%	24.10%	15.71%	6.62%	2.40%	0.85
Learning management system	24.33%	21.53%	22.10%	20.67%	11.36%	1.73
Web 2.0 tools (wikis, blogs, social networks)	25.84%	25.21%	21.85%	17.86%	9.24%	1.59
Search engine	16.18%	11.64%	16.47%	27.03%	28.68%	2.40
Communication platform (e.g., Google Meet)	2.83%	7.08%	18.07%	34.33%	37.68%	2.97
Mean weighted average						2.13

4.3.2 Social Media

When learners were asked whether they had a social media profile or account, a majority of 95% indicated yes (Figure 23). Learners used different platforms, the most common being Facebook, at 89.8% of respondents. The second most used were photo-sharing platforms such as Instagram (44.5%). The least used were blogging platforms such as Blogger, WordPress, etc., at 9.2% (Figure 24).

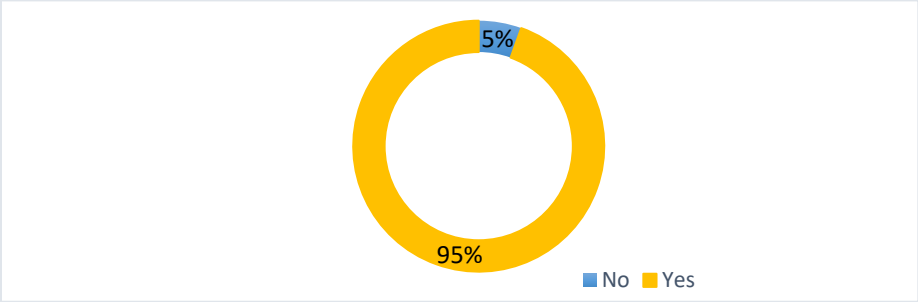


Figure 23: Distribution of respondents with social media profiles.

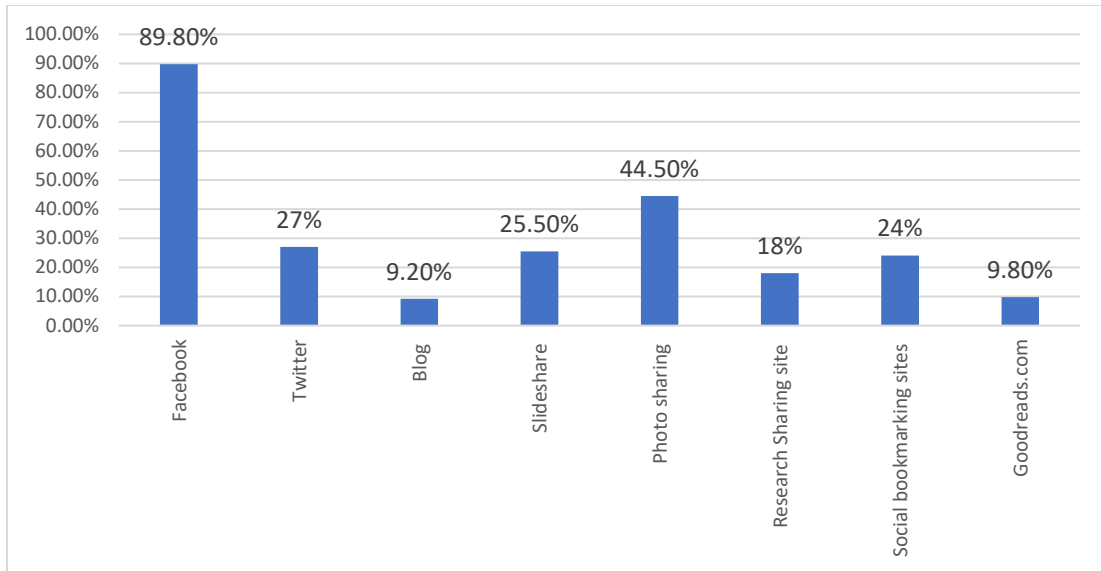


Figure 24: Distribution of respondents using various social media platforms.

4.3.3 Social Media Status Updates and Time Spent Daily

Data indicated that around half of the learners did not update their status regularly (50.1%). However, 17.1% updated their social media status several times a day, while 10.6% did not update at all (Figure 25). This indicated that a large portion of those with social media profiles and platforms did not engage in regular updates. When asked about the time they spent daily on social media, the largest portion of respondents (39.6%) spent at least one to two hours, 25.6% spent three to five hours, and 11.2% spent more than 5 hours. A small percentage (4.3%) did not spend any time on social media daily (Figure 26).

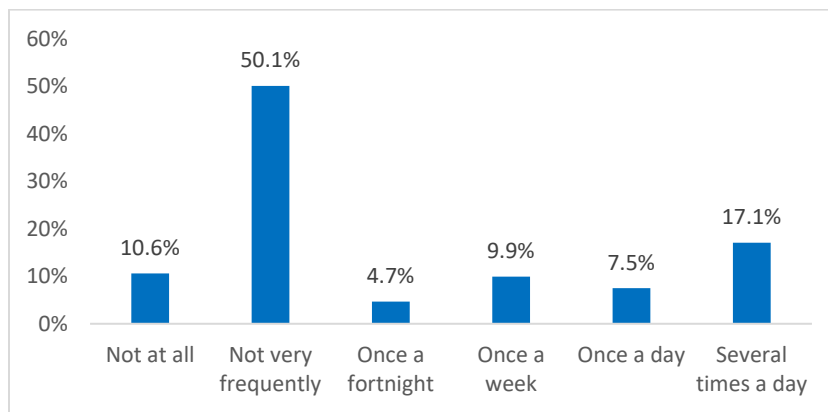


Figure 25: Distribution of respondents' frequency in updating social media status.

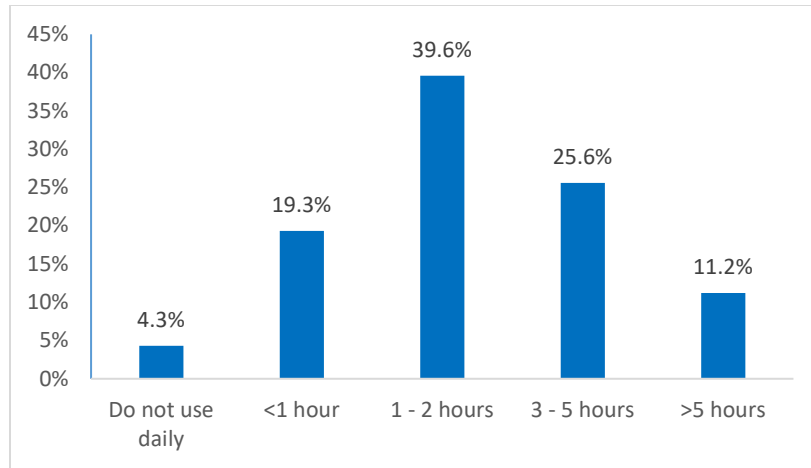


Figure 26: Distribution of respondents' time spent daily on social media.

4.4 Use of Online Courses

When asked whether they had taken an online course, 74% responded yes (Figure 27). As learners are in-service teachers, NIE delivers several online courses to all teachers of government schools, and most teachers are required to have taken at least some of these courses. When asked whether they had taken a massive open online course (MOOC) through any institution or organisation, 33.8% indicated they had completed a MOOC. A higher percentage, 55.6%, indicated never having taken a MOOC, with 42.8% indicating they did not even know about MOOCs (Figure 28).

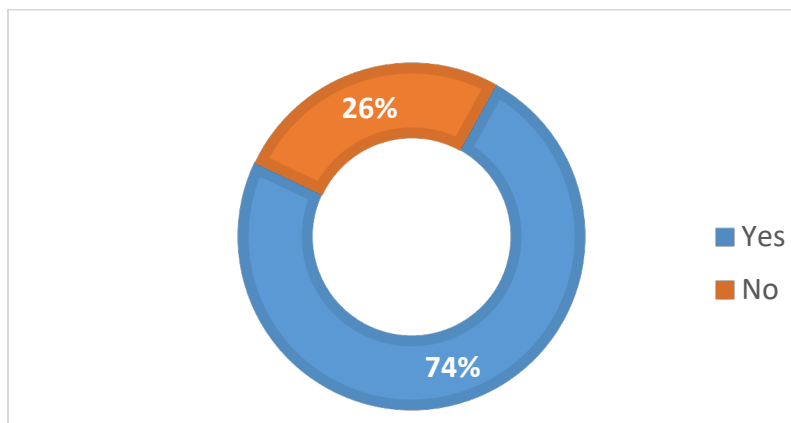


Figure 27: Distribution of respondents who had taken an online course.

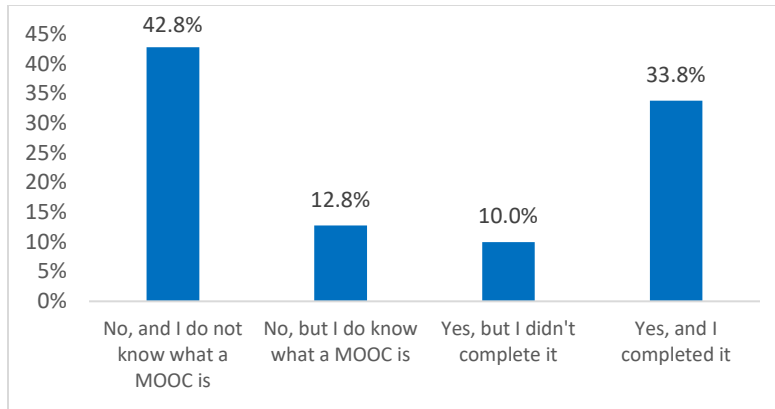


Figure 28: Use of a MOOC.

4.5 Perceptions about Using Technology-Enabled Learning

4.5.1 Perceptions of How Technology Use Benefits Teaching and Learning

When the benefits of technology use in teaching and learning were explored, learners gave very positive responses, with all items obtaining high mean values indicating strong agreement. All but one item showed a mean value of 4.5; the slightly lower mean of 4.4 related to whether technology allowed them to collaborate with others easily both on and off campus (Table 14).

Table 14: Perceptions about the importance of technology for teaching and learning

	Strongly Disagree	Disagree	Neither Agree/Disagree	Agree	Strongly Agree	Weighted Average
It will help me get better results in my subjects.	0.44%	0.76%	4.92%	38.68%	55.21%	4.5
It will help me understand the subject material more deeply.	0.06%	0.89%	3.61%	36.81%	58.63%	4.5
It makes completing work in my subjects more convenient.	0.32%	0.95%	4.11%	40.99%	53.64%	4.5
It motivates me to explore many topics I may not have seen before.	0.25%	0.82%	3.92%	39.49%	55.51%	4.5
It allows me to collaborate with others easily, both on and outside of campus.	0.44%	1.46%	4.62%	41.67%	51.80%	4.4
It will improve my IT/information management skills in general.	0.51%	0.70%	4.25%	40.20%	54.34%	4.5
It will improve my career or employment prospects in the long term.	0.32%	0.51%	5.07%	41.36%	52.75%	4.5

4.5.2 Perceptions about the Usefulness of Various Technologies

When asked about their perceptions of the usefulness of different technologies, regardless of whether they actually used them, learners gave positive responses by agreeing to most items.

Learners agreed with creating and presenting video/audio as part of their teaching requirements; creating and presenting multimedia shows as part of their teaching requirements were regarded as most useful, with a mean value of 4.23. Downloading or accessing online video recordings of lectures they could not attend was also regarded as useful, with a mean value of 4.10. The lowest mean values of 3.17, 3.26 and 3.27 were for using microblogging to share information about class-related activities, designing and building webpages as part of the programme, and keeping their own blog as part of course requirements, respectively (Table 15).

Table 15: Perceptions about the usefulness of different technologies

Technology Activity	Don't Know	Not At All Useful	Useful to a Limited Extent	Normal	Useful	Very Useful	Weighted Average
Use an e-portfolio system to record your achievements for future use	6.32%	2.15%	4.56%	15.04%	43.36%	28.58%	3.73
Use a personal dashboard on the intranet to access all your academic information	5.53%	2.41%	4.10%	14.82%	43.56%	29.58%	3.77
Receive pre-class discussion questions from your lecturer via text message	3.51%	3.25%	5.00%	14.42%	44.51%	29.30%	3.81
Receive grades/marks from your lecturer via text message on your mobile phone	2.91%	3.04%	4.98%	13.83%	43.18%	32.06%	3.88
Contribute with other participants to the development of a wiki	7.20%	3.31%	4.54%	19.53%	42.70%	22.71%	3.55
Receive alerts about course information via text message on your mobile phone	2.97%	1.68%	3.81%	14.14%	40.80%	36.60%	3.98
Receive alerts about course	4.89%	2.45%	3.93%	15.71%	41.34%	31.68%	3.81

Technology Activity	Don't Know	Not At All Useful	Useful to a Limited Extent	Normal	Useful	Very Useful	Weighted Average
information via RSS feeds on the Web							
Use web-conferencing to communicate/ collaborate with other participants	3.93%	2.19%	4.96%	15.80%	45.00%	28.11%	3.80
Use the Web to share digital files related to your course	4.37%	2.51%	4.63%	15.11%	44.12%	29.26%	3.80
Contribute to another blog as part of your course requirements	8.50%	5.39%	6.55%	24.21%	38.48%	16.87%	3.29
Use instant messaging/chat to communicate with teachers and other staff	4.39%	3.64%	0.75%	19.42%	43.10%	28.69%	3.68
Keep your own blog as part of your course requirements	8.96%	6.25%	7.35%	22.36%	36.47%	18.62%	3.27
Use microblogging to share information about class-related activities	9.32%	8.48%	8.29%	22.11%	33.16%	18.64%	3.17
Use a social media networking platform to communicate with others	3.38%	3.31%	6.76%	17.27%	40.73%	28.55%	3.74
Use instant messaging/chat to communicate/ collaborate with other participants	3.32%	2.23%	5.42%	12.95%	42.18%	33.89%	3.90

Technology Activity	Don't Know	Not At All Useful	Useful to a Limited Extent	Normal	Useful	Very Useful	Weighted Average
Use your mobile phone to access web-based NIE services or information	5.68%	3.00%	4.79%	13.73%	37.10%	35.70%	3.81
Use the Web to access NIE-based services	6.21%	2.30%	4.93%	14.20%	36.92%	35.44%	3.80
Download or access online audio/video recordings of supplementary content	2.36%	1.34%	4.92%	10.92%	39.66%	40.80%	4.07
Download or access online audio/video recordings to revise content	1.98%	1.98%	4.97%	10.83%	37.16%	43.08%	4.08
Download or access online video recordings of lectures you could not attend	1.90%	2.29%	5.52%	9.84%	35.43%	45.02%	4.10
Create and present audio/video as part of your teaching requirements	1.40%	1.34%	5.72%	8.14%	30.90%	52.51%	4.23
Create and present multimedia shows as part of your teaching requirements	1.14%	1.78%	7.17%	7.49%	27.75%	54.67%	4.23
Design and build webpages as part of your programme	6.80%	7.62%	13.72%	18.04%	32.21%	21.60%	3.26

4.5.3 Perceptions about Technology Used in Education

The highest mean values for learners' perceptions about technology use in education were for items

related to technology and connecting with others. It is evident that for them, the use of technology makes them feel connected to teachers, connected to others and connected to NIE as learners, as these statements had mean values of 4.07, 4.06 and 4.00, respectively. Learners also agreed that they like to keep their social and academic lives separate on social media, with a mean value of 3.87. Learners neither agreed nor disagreed that they were more likely to skip classes if course materials were available to them (Table 16).

Overall, learners' responses in this category were mainly positive towards the use of technology in teaching and learning.

Table 16: Attitudes towards technology used in education

	Don't Know	Strongly Disagree	Disagree	Neither Agree/ Disagree	Agree	Strongly Agree	Weighted Average
In-class use of mobile devices is distracting to me.	2.21%	2.86%	11.05%	20.09%	46.16%	17.62%	3.58
Technology makes me feel connected to what's going on at NIE.	1.83%	1.70%	1.76%	9.92%	59.30%	25.51%	4.00
I wish my teachers would use and integrate more technology in their teaching.	2.35%	1.70%	2.42%	12.94%	56.21%	24.38%	3.92
On social media, I like to keep my academic life and social life separate.	2.73%	2.34%	4.55%	12.43%	51.92%	26.02%	3.87
Multitasking with my technology devices sometimes prevents me from concentrating on or doing the most important work.	3.07%	2.35%	7.76%	18.92%	53.23%	14.68%	3.61

	Don't Know	Strongly Disagree	Disagree	Neither Agree/Disagree	Agree	Strongly Agree	Weighted Average
Use of tablets/ laptops in class improves my engagement with the content and class.	2.34%	2.34%	4.41%	13.17%	57.04%	20.70%	3.82
In-class use of mobile devices distracts my teacher.	3.57%	3.44%	8.96%	17.21%	48.31%	18.51%	3.59
I am concerned about cyber security (password protection and hacking).	3.37%	2.33%	4.14%	12.17%	53.59%	24.40%	3.83
I am concerned that technological advances may increasingly invade my privacy.	3.25	2.99	10.79	20.73	46.65	15.59	3.51
Technology interferes with my ability to concentrate and think deeply about subjects I care about.	1.89	3.45	10.27	15.21	46.55	22.63	3.69
Technology makes me feel connected to teachers.	1.10	2.34	2.47	9.09	52.08	32.92	4.07
Technology makes me feel connected to other participants.	1.30	2.60	2.34	7.87	54.29	31.60	4.06
I was adequately prepared to use the technology needed in my courses.	3.92	3.60	6.87	14.91	55.66	15.04	3.60

	Don't Know	Strongly Disagree	Disagree	Neither Agree/Disagree	Agree	Strongly Agree	Weighted Average
I am more likely to skip classes when materials from course lectures are available online.	3.38	11.11	33.20	21.96	24.76	5.59	2.70
I get more actively involved in courses that use technology.	2.52	4.71	5.04	12.46	50.23	25.05	3.78

4.6 Summary

The majority of the learners have access to the Internet and digital devices. They also possess basic skills related to technology, but few use programs that require more advanced skills. The majority of them use social media platforms, with Facebook being the most popular. Overall, learners have a very positive attitude towards technology-enabled learning.

Chapter 5: Conclusions and Recommendations

5.1 Key Findings

Based on this study's findings, it can be concluded that the majority of NIE's learners and staff have access to digital devices and the Internet. They also possess the basic skills related to technology, but lower percentages of learners use programs that require advanced skills, and even fewer teacher educators use these advanced skills. Social media platforms are used by the majority of learners and teacher educators. However, despite having active accounts and Internet access, they do not update their status regularly. Most teacher educators have had positive experiences with using the resources provided by NIE, and the majority are involved in blended teaching and online teaching. Yet less than half of the teacher educators are aware of OER. Both teachers and teacher educators generally have a very positive attitude towards the use and benefits of TEL in teaching and learning. Teacher educators indicated mostly internal factors as motivators to use TEL, while barriers were mostly external factors, such as not having the necessary resources.

5.2 Recommendations

At present, NIE is at the stage of developing preparedness for TEL. There is a dearth of well-defined policies and guidelines related to e-learning or technology-enabled learning, which are required to implement TEL in a more systematic way. To facilitate further progress and enhance the effectiveness of TEL, it is crucial to develop new policies and implement them broadly. Policy makers are therefore recommended to develop relevant policies that pertain to TEL. Clearly guided policies will facilitate TEL implementation, leading to more meaningful improvements in teaching and learning at NIE.

The study's findings demonstrate that the human resources and infrastructure capabilities necessary for implementing TEL are available. This achievement owes much to the Covid-19 pandemic, which created a high demand for online teaching and learning, resulting in several initiatives to improve teacher capacity and infrastructure in schools and at NIE (MOE, 2021). In addition, a new ICT in education master plan was developed and has been implemented since 2021, which very clearly guides the development of infrastructure and human resources at schools and NIE.

Despite these positive factors, the quality of TEL and e-learning courses remains a concern. To ensure the delivery of high-quality courses through TEL, a new learning model or format suitable for the Maldivian context is needed. It is essential to create a cohesive strategy for teaching and learning based on a distance learning and blended learning model to determine whether the online classes and lessons that use technology meet the expected standards. If a suitable learning model is established for distance education and blended learning, it will not only ensure quality but also provide accessible in-service training for everyone and help overcome the challenges arising from the geographical distribution of Maldives' islands.

The majority of the respondents reported having access to devices and Internet connectivity, while only a minority reported lacking these resources. Nevertheless, it is critical to identify and reach out

to the small percentage of individuals who lack such resources and remedy that gap. Also, despite the fact that most respondents are equipped with the basic competencies, there is a need to focus on providing more advanced training, based on individual needs and capabilities.

Currently, most teachers and teacher educators possess basic digital competencies. But to fully leverage technology for teaching and learning, more advanced skills such as web design, animation creation and LMS management need to be provided to targeted groups. These efforts can ensure that educators are equipped with the necessary skills to effectively utilise technology in the classroom, create engaging digital content and manage online learning platforms, leading to more innovative and effective technology-enabled learning experiences for students.

To enhance the effectiveness of TEL, it is essential to engage in joint efforts with similar institutions from other countries. Such collaborations can offer access to best practices and contribute to the accomplishment of goals and objectives. Sharing ideas and resources can also foster greater motivation and positivity toward TEL, and provide opportunities to meet role models and learn from their successful experiences.

References

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

Ministry of Education. (2021). *Maldives ICT in Education Master Plan II: 2021–2024*.

The World Bank. (2021, April). *Maldives development update: A digital dawn*. <https://thedocs.worldbank.org/en/doc/93bdbd79b45eeb504743f4514f1095e1-0310062021/original/April-2021-Maldives-Development-Update.pdf>



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