



COMMONWEALTH *of* LEARNING

Report on the Baseline Study of Technology-Enabled Learning at Antigua State College



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Executive Summary

This report presents the findings of a baseline study conducted at the Antigua State College (ASC) to understand the access and use of information and communication technologies for teaching and learning. The research purpose is to assess the readiness of the ASC to implement technology-enabled learning (TEL) by adopting a systematic approach of policy formulation, capacity building and infrastructure improvement. It will identify the gaps in the skills of our students and staff and support the policy development process for TEL.

This baseline study consisted of three surveys. Commonwealth of Learning (COL) provided the survey instruments, which are available in the TEL Implementation Handbook (Kirkwood & Price, 2016). The three surveys administered with the use of LimeSurvey. The numbers of respondents were 56 Learners and 32 Faculty members. The institutional survey was responded by the Administrative staff.

The institutional preparedness score for TEL at ASC is 87, which indicated limited preparedness. This also makes it important to focus on TEL policy-capacity-technology approach proposed by COL.

Teachers do have access to technology. But are more concerned about the Internet access and have limited skills in using and integrating ICTs in teaching and learning.

Interestingly, 93% students have access to smartphones. They are more concerned about access to Internet and poor bandwidth. They are also demanding more integration of ICTs in teaching and learning, and are ready to embrace TEL.

Overall, the study highlights the issues and challenges faced by the teachers and learners at ASC. Many of these could be addressed through a systematic approach to improve the infrastructure, provide instructional design support to faculty and orient student for effective use of technology. As a starting point, the report recommends having a TEL policy adopted by ASC and engage with COL to optimise the free resources available.

Chapter 1: Introduction

1.1 Context

The Antigua State College (ASC) is a public institution: a Community College. The population consists of 176 teachers/lecturers and 1041 students, spread across five Departments; namely, Department of Liberal Arts, Department of Industrial Technology, School of Pharmacy, Department of Business and Department of Teacher Education. Students engage in studies leading to an Associate Degree. The primary method of teaching is face-to-face.

The Administration at ASC has come to the realization that the development of infrastructure, staff and students should be at the forefront at this time. Thankfully, the request for assistance in training staff at ASC, was welcomed by Commonwealth of Learning (COL). This Baseline survey, therefore, should be the catalyst to bring about change in the use of new technologies in teaching and learning.

The work of Kirkwood and Price (2016) brings to light the concepts and principles of the technology-enabled learning (TEL) environment and challenges that leaders need to examine in their educational offerings and how digital technologies can be used to improve the quality of teaching and learning. Thus, this baseline study should provide valuable data to assess the TEL environment and enable development of relevant policies. This also includes examination of teachers' and learners' perceptions about the use of information and communication technologies (ICTs) for teaching, learning, research and development and sharing of materials.

1.2 Antigua and Barbuda ICT in Education Policy

The Government of Antigua and Barbuda instituted an ICT in Education Policy in 2013 which was developed with the support of the Commonwealth of Learning. The Policy aim is to “respond to the change which technology brings to the nature of work and the workplace” (Government of Antigua and Barbuda, 2013). The policy committed to:

- review and revise curricula to determine how ICT could enhance teaching and learning;
- empower educators to enhance face to face instruction and support and mentor students diverse abilities;
- assist learners to develop their entrepreneurship skills with ICT; and
- create a compressive repository of open educational resources to meet the requirements of the national and regional curriculum.

Although the ICT policy focuses on a paradigm shift in the education system, the progress of ICT in education has not advanced as projected. Antigua and Barbuda has engaged in several ICT in Education initiatives with a vision to:

1. Reconstruct the learning capacity,
2. Encourage entrepreneurship, and
3. Constitute Antigua and Barbuda as the ICT capital of the Caribbean. (Government of Antigua and Barbuda, 2013)

A study on the ICT and open education resources (OER) in Antigua and Barbuda found that the various ICT initiatives were not properly documented and evaluated (Peters-Richardson, 2016). Proper documentation and evaluation of these initiatives will inform and identify gaps, successes and challenges that can be addressed and monitored. The ASV in its implementation of TEL will ensure that proper documentation, monitoring and support are key components of this project to achieve the vision and mission of the institution.

1.3 Vision and Mission

Mission Statement

The ASC, in collaboration with its stakeholders, is committed to providing the academic, technical, vocational and para-professional needs of the country, through the delivery of its programmes in all of the practical and modern technology modes, while providing continuing education to satisfy the human development requirements of all its citizens with ongoing quality assurance.

Vision

The ASC will become a degree granting institution providing the citizens of Antigua and Barbuda and the Caribbean region with greater opportunities to access tertiary level education and training by creating the environment for quality instruction in the delivery of its courses and programs. In addition, the college will develop a student friendly environment designed to enhance human potential and promote lifelong learning.

1.4 Objectives

The objective of this study is to determine the preparedness of the ASC to systematically integrate ICTs in teaching and learning. The baseline surveys serve as an assessment of the following:

1. The infrastructure at the ASC to support the implementation of TEL;
2. The technology resources and the availability of Internet access and connectivity at the institutions;
3. The access to Internet to learners and faculty;
4. The skills of teachers to integrate ICTs in their teaching learning practices;
5. Learners and faculty access to TEL resources; and
6. Learners and faculty perception of ICTs for teaching and learning.

1.5 Methodology

Separate structured questionnaires were administered to teachers and students. The surveys were distributed electronically via email; the response rate to the teacher survey was 18.2% while for the student survey it was only 5.4%. An institution survey was also completed by the College management.

Table 1: Data Sample

Survey Title	Total Population	Number of responses	Response rate
Learners	1041	56	5.4%
Faculty	176	32	18.2%

1.6 Challenges and Limitations

The major challenge was the low response rate of teachers and students to the completion of the surveys. The surveys were sent to staff and students at the end of the academic year so this could be a factor in the low responses as faculty and learners were more focused on their vacation. Also, the COVID-19 situation exacerbated the challenges for data collection due to the timing of the study.

Another factor is lack of reliable Internet access to complete the survey.

Some faculty members reported that they had limited knowledge of the terminologies used in the faculty survey and this deterred them from completing the survey. Moving forward, this is also an indication of the needs to build local capacity and implement TEL.

Despite limited data, the surveys provides some vital information, though may not be reflective of the faculty and learners population. This report will be used as a starting point for further discussion in the context of the emerging post COVID-19 scenario to plan for TEL implementation at ASC.

Chapter 2: Infrastructure Analysis at ASC

The institutional questionnaire was completed by the Vice Principal of Antigua State College (ASC) with assistance from the Administrative Staff. The primary aim of this questionnaire is to assess the TEL environment and enabling policies in educational institutions. The survey was used to elicit information about the hardware, software and digital infrastructure presently available for teaching and learning.

2.1 Hardware and Software

At ASC, there are 95 desktop computers and 50 Laptops. Ten (10) e-classroom facilities exist. However, the form of hardware used for integrating ICT is limited to the usual LCD Projector, fitted with desktop computers/laptops/DVD players; there is no SMART board or interactive whiteboard.

Currently, without an e-content or audiovisual unit/studio/centre, the college is not engaged in the production/creation or sharing/dissemination of any educational content.

2.2 Internet Connectivity

Internet access is available to staff, faculty members and students through Broadband connectivity, which is provided by a Government-sponsored Internet provider at a speed of < 1 Gbps. Internet access is limited to three areas: library, laboratories and reception lounge. Since there is no Wifi or Wireless connectivity on campus, users can only connect using their personal Internet connections in classrooms, seminar rooms, student common rooms and open areas, and there is no access control for restricting the download of, or access to online material/information. The College only maintains one official profile/group media platform; that is, Facebook.

Figure 1 shows further evidence of the limited online facilities that are available at ASC; namely, older media/learning systems instead of new technology; computer labs; using the Facebook media platform, and maintenance. However, the data indicate there are plans to provide newer innovative software and several types of databases relevant to research; and other e-classroom facilities which would upgrade the technology-enabled environment.

This section is a presentation of data which indicate the level of institutional preparedness for technology-enabled of ASC.

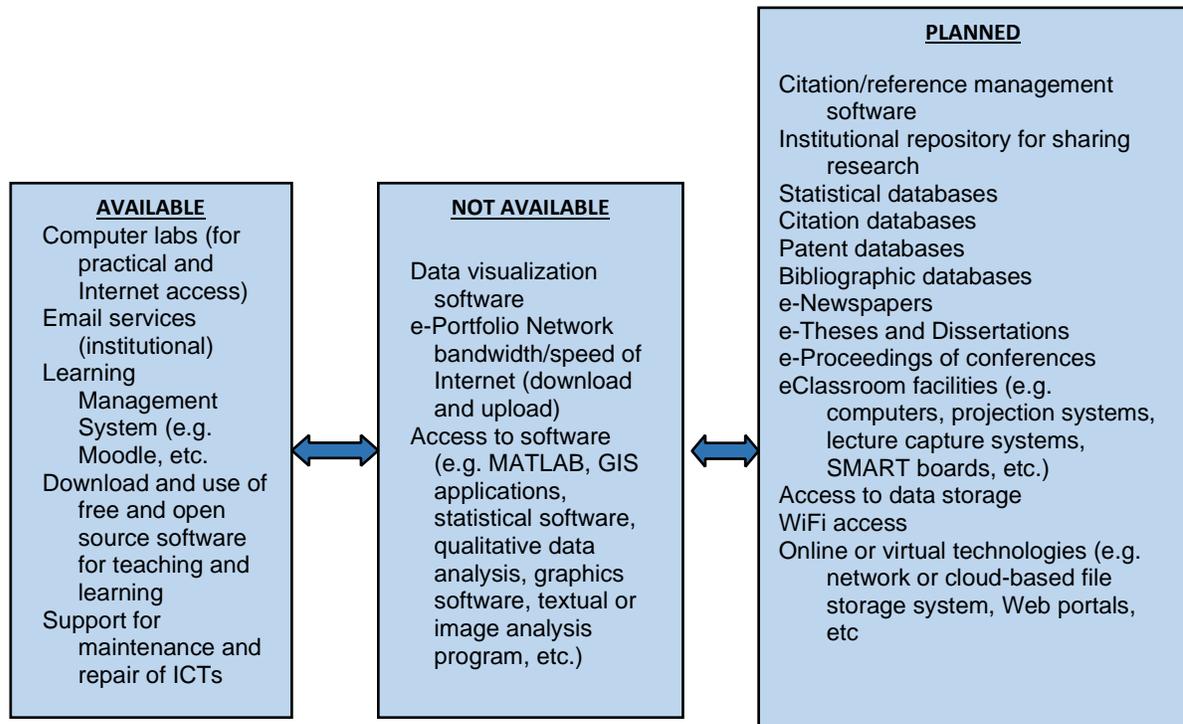


Figure 1 Online facilities

The total score for ASC institutional preparedness is 87. A score of 87 represents limited preparedness, based on the range 55-97 in the TEL Implementation Handbook (Kirkwood & Price, 2016, p. 88). Leadership is a strong element throughout, but weakness is observed with regards to infrastructure, software and hardware, access, policies and procedures, documentation; and organizational culture of creating and sharing. Of note, only 12/176 staff members have been trained over a 10-hour period, in the past year – this is minimal exposure and could influence the capacity to effect change.

Leadership and support are available for training, motivation, encouragement, development, reporting and maintenance; however, strategic planning and the output of senior managers are not transparent. In addition, reliance on older media, the mistrust of collaboration, teachers’ attitude to training and application of technology to transform teaching and learning and development of content in the ASC context adds to the marginality of the functioning of the institution. Above all, the absence of appropriate policies which should outline clear educational goals, strategies, and procedures for the application of technology has had the greatest negative effect on the institutional preparedness.

If policies and clear strategies for procedures are implemented then there will be a positive reflection of behaviours and attitudes of leaders, managers, and other staff within the technology-enabled learning environment. For example, there is a strategy for repair and maintenance. Two policies are in development: namely, the ICT Use policy for teaching and learning and strategy for TEL. On the other hand, other policies that would guide the use of

technology, for privacy and data collection, use of Open Resources, and use of Open Software are non-existent.

Overall, the infrastructure at ASC is suitable for TEL implementation, but needs substantial strengthening. The urgent need is to develop staff capacity and support system to make TEL an integral part of teaching and learning.

Table 2: ASC's Institutional preparedness for TEL

Category/Analysis	Characteristics	Score
Policy ASC has no TEL policy, but there is one in the developmental stage. However, the commitment of leaders is currently a catalyst for achieving the academic goals	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 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.	4
Sub-total		7
Strategic Plan There is uncertainty regarding the readiness of the strategic plan; it is being developed.	There is a strategic plan for the implementation of Technology-Enabled Learning.	3
	The strategic plan for Technology-Enabled Learning has measurable goals and outcomes	3
	The strategic plan for Technology-Enabled Learning is approved by the senior management of the organisation and is supported by adequate financial provisions.	3
Sub-total		9
IT Support Department Although the role and function of the IT department and the leader is clear, the effect of an unclear policy is noted and the evidence of leader qualification is marginal.	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 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	3
Sub-total		15
Technology The hardware infrastructure and applications and software are inappropriate and inadequate for teaching and learning; networking infrastructure and data privacy and security are nonexistent.	There is adequate hardware infrastructure for teaching and learning (e.g. access to computers for students and learners)	2
	There are adequate applications and software for teaching and learning (e.g. access to appropriate software, intranet, Learning Management System, etc.	1
	There is adequate networking infrastructure in the organisation (e.g. access to adequate bandwidth).	1
	There are adequate policies and procedures in place to protect privacy and organisation data.	1
Sub-total		5
Content There is minimal evidence of the ability and qualification of teachers to develop and organise content;. This could be as a result of the lack of support to create/develop audio, visual, or e-content	There is support available for the creation of digital multimedia content in the organisation (e.g. production of eCourses, audio and video materials, animation, etc.)]	1
	There are instructional designers in the organisation or faculty members are trained to organise learning content appropriately	2
	Teachers have adequate access to the online system to develop courses for Technology-Enabled Learning	2

materials – digital multi-media		
Sub-total		5
Document The support for teachers and students for application of technology for teaching and learning is marginal, and documentation and sharing of workflow processes are nonexistent.	There is a variety of help available to support teachers and students in using technology effectively.	2
	Lessons learned in the implementation of the Technology-Enabled Learning are stored and shared within the organisation for others to access and learn from.	1
	The workflow processes and responsibilities to implement Technology-Enabled Learning are well documented in the organisation	1
	Sub-total	4
Organization Culture There is no evidence of faculty and staff seeking learning about ICT, and there is little evidence of support, creation and sharing among staff	Faculty and staff members are willing to learn about new technology in the organisation.	1
	Faculty and staff members support each other easily	2
	There is a culture of knowledge creation and sharing in the organisation.	2
	Sub-total	5
Leadership While the top leadership offers support, encouragement and motivation in the hope of achieving the academic goals, the role of the senior managers is difficult to explain; thus, there is little evidence of TEL	Leaders in the organisation are involved in the implementation of Technology-Enabled Learning.	2
	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	4
	Sub-total	9
Human Resource Regular training of faculty and staff members to use technology for teaching and learning is a feature of The ASC environment. Yet, the evidence of the skill and training of staff are in question. Again the possibility of content creation and teaching and learning are thwarted by lack of structure – strategies and procedures.	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	4
	There are adequate staff to support Technology-Enabled Learning.	3
	The organisation has a structure in place to create teams for content development and delivery of Technology-Enabled Learning.	1
	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.	3
	Sub-total	17
TEL Champions Faculty members are available who can lead teams in the development of policies and TEL strategies.	There are early adopters of Technology-Enabled Learning in the organisation.	2
	There are TEL champions in the organisation who support and care about pedagogic innovations	2
	There are faculty members who can take leadership roles in developing appropriate policies and a Technology-Enabled Learning strategy for the organisation.	4
	There are TEL champions to research and disseminate good practices in Technology-Enabled Learning.]	3
	Sub-total	11
Grand Total		87

Chapter 3: Teachers' Use of Technologies for Teaching and Learning

3.1 Faculty Profile

3.1.1 Gender and age distribution

There were 32 respondents to the questionnaire: 78% were females and 22% were males. The age distribution of the respondents is presented in *Figure 2*, which shows that the following age groups, 36 – 40, and 46 - 50 had the highest percentages (19%). This was followed by the age group 31 – 35 which accounted for 16% of the respondents. Respondents between the ages of 26 – 30 and 51 – 55 each accounted for 13%. This data indicates that the majority of the respondents are between the ages of 31 and 50 years old.

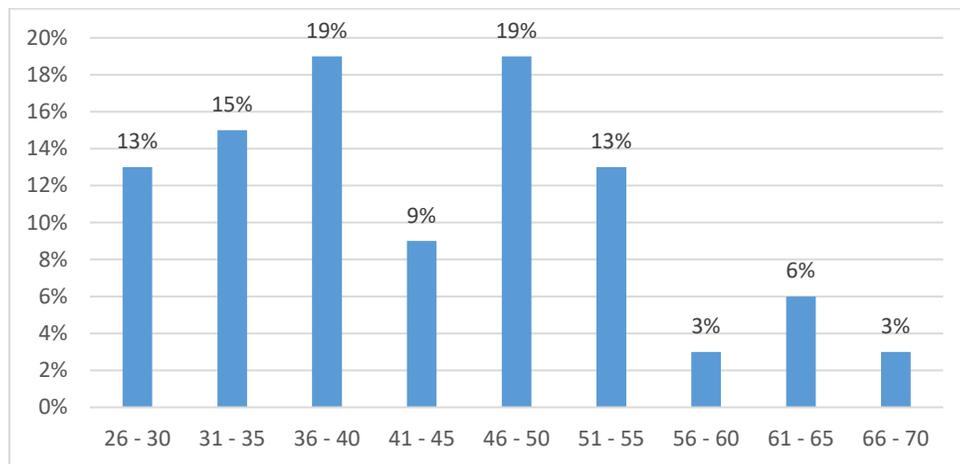


Figure 2 Age Distribution of Faculty Members

3.1.2 Faculty positions and qualifications

Positions

The majority of the respondents (75%) are Lecturers while only 21.8% are Senior Lecturers. Three of the respondents (9%) did not indicate their position.

Qualifications

As seen in *Figure 3*, just over a third of the respondents (38%) has bachelor's Degrees while one person (3%) each has a Ph.D. or an associate degree. Another 28% each has Masters Degrees and other skilled qualifications. It would appear that the respondents had differing ideas about "Other skilled qualifications" since they identified these qualifications as college diploma, Post graduate diploma, doctoral research and technical certificate, Diplomate Certified Counsellor and Psychotherapist, and a certificate in Technical and Vocational field (Diesel Mechanics 4, and Electric Utility Services).

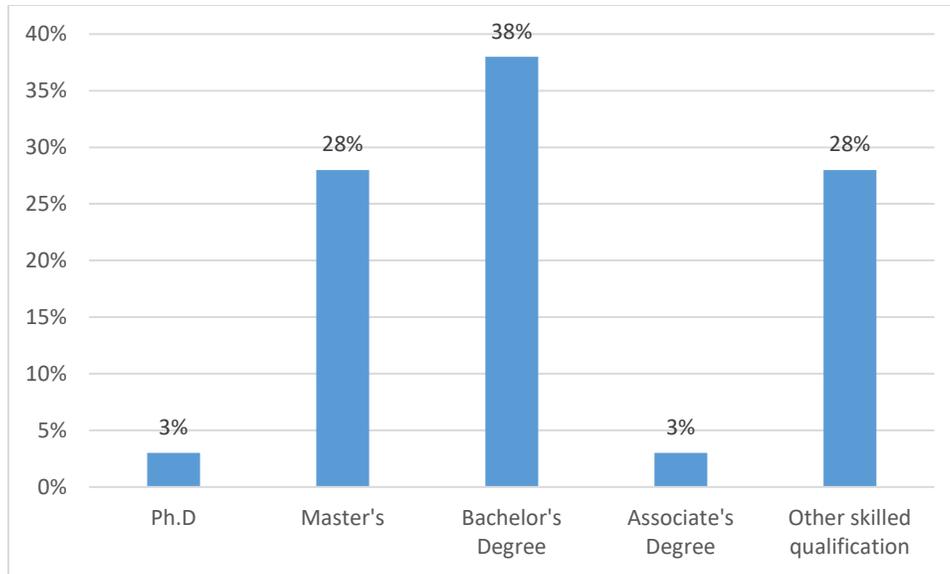


Figure 3 Highest Qualification

3.1.3 Teaching Level and Experience

Teaching Experience

The majority of the respondents have been teaching over 6 – 10 years, but there are varying levels of teaching experience. *Figure 4* reveals that 19% have been teaching for 31 – 35 years. Another 16% each have been teaching for 6 – 10 years and 16 -20 years followed by another 13% who have been teaching for fewer than five years or 11 – 15 years.

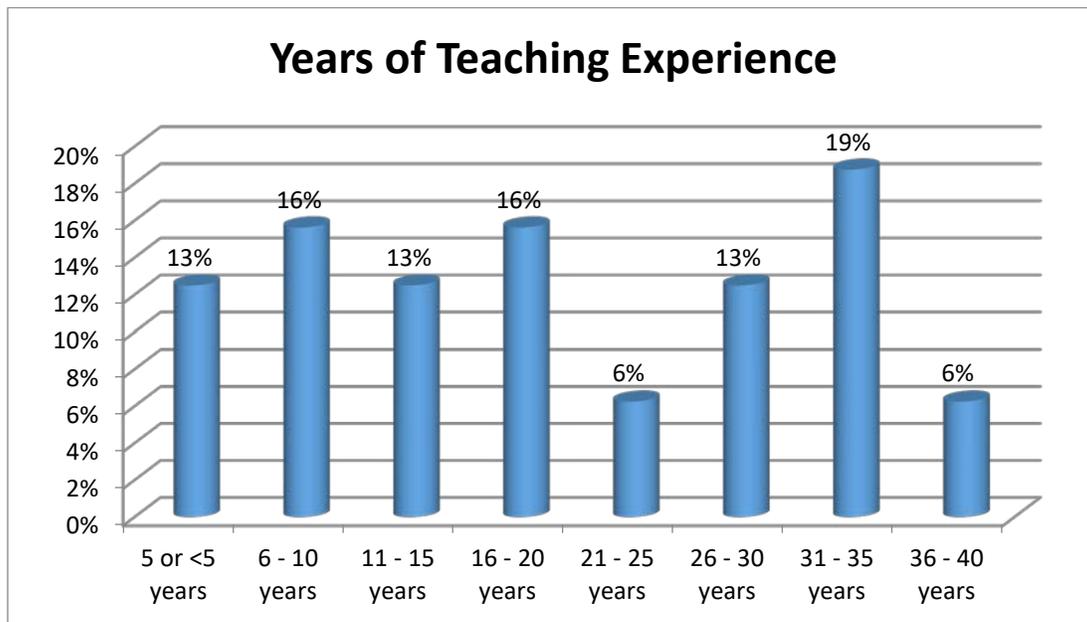


Figure 4 Teaching Experience

Teaching Levels

Figure 5 shows that the majority of respondents (83%) are primarily involved in the Associate’s degree teaching and Certificate and Graduate teaching 7%. Only 3% was involved in Doctoral Research. Three of the respondents did not respond to this question.

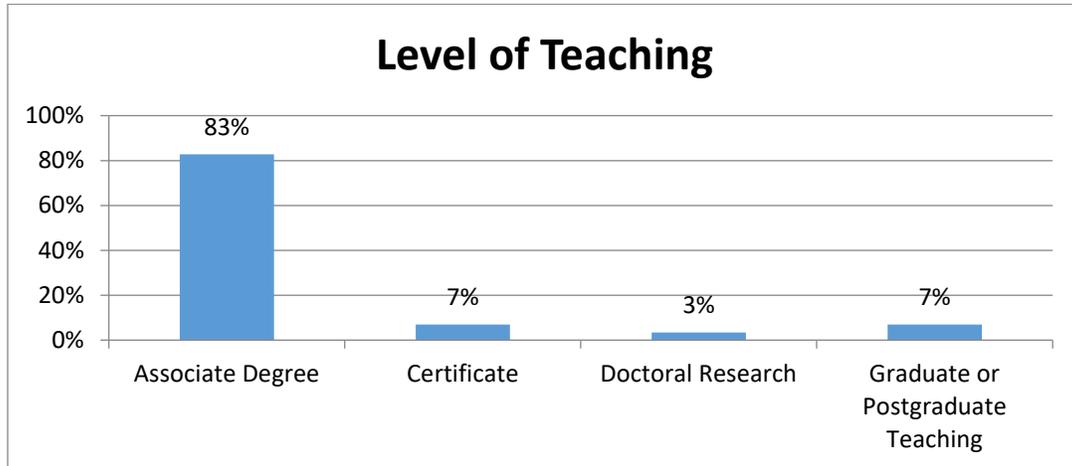


Figure 5 Teaching levels

Disciplines of the Respondents

Just over a third (34%) of the respondents came from the Humanities (Table 3), followed by Social Sciences (25%), Commerce and Management (9%) and Natural Sciences (9%). The other 18.75% was equally shared between Engineering and Technology, Agriculture and Natural Science and those who did not respond.

Table 3: Disciplines of the Respondents

DISCIPLINE	PERCENTAGE
HUMANITIES	34%
SOCIAL SCIENCES	25%
COMMERCE AND MANAGEMENT	9%
HEALTH AND MEDICAL SERVICES	3%
NATURAL SCIENCES	9%
ENGINEERING AND TECHNOLOGY	6%
AGRICULTURE & NATURAL SCIENCE	6%
NO RESPONSE	6%

Note. Total percentage is 98% as a result of rounding.

3.2 Access to and Use of Information and Communication Technologies (ICT)

3.2.1 Ownership of and access to ICTs

Figure 6 shows that Most teachers have access to electronic devices, with the majority having Smartphone (94%). Laptops are slightly less prevalent (88%). Falling well behind that rate of ownership are tablets (41%) and desktop computers (28%). The tablets and desktops also seem to be the least attractive among teachers with 38% and 53% respectively, do not own a device, who indicated that they are not likely to purchase neither a tablet nor desktop in the next 12 months.

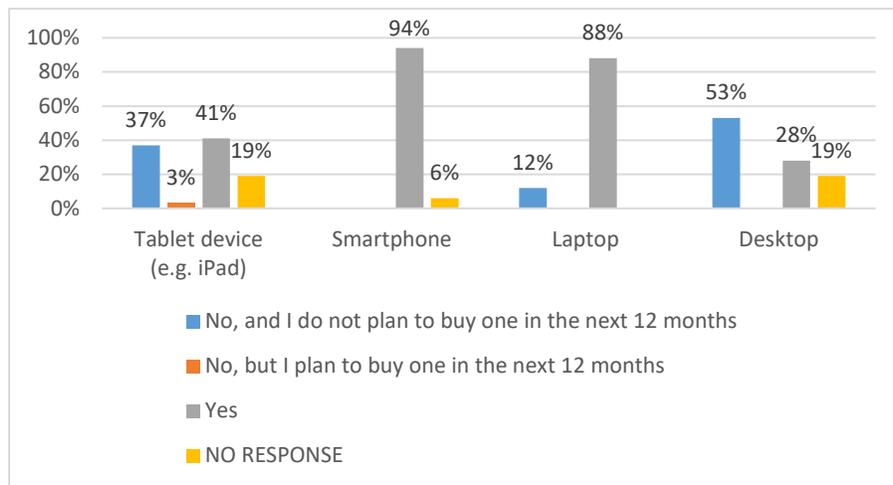


Figure 6 Ownership of Devices

3.2.2: Ownership of and access to ICTs

Further data indicates that on-campus access mirrors ownership, with smart phones (82%) and laptops (72%) being most prevalent (Figure 7). However, despite tablet ownership at 41%, usage on campus is only 25%. In terms of desktop access, 53% report that this is provided by the College.

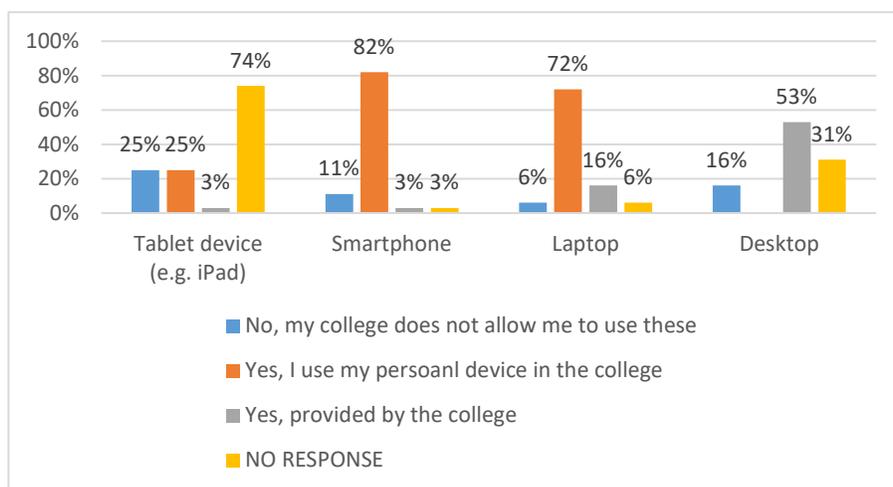


Figure 7 Access to Devices at the College

3.2.3 Internet Access Location

All of the teachers have internet access either at home or the office. In terms of where teachers access the Internet, the vast majority (97%) of teachers have Internet access at home (Figure 8); however, at the office, only 69% of teachers report access. Cyber cafes are not used.

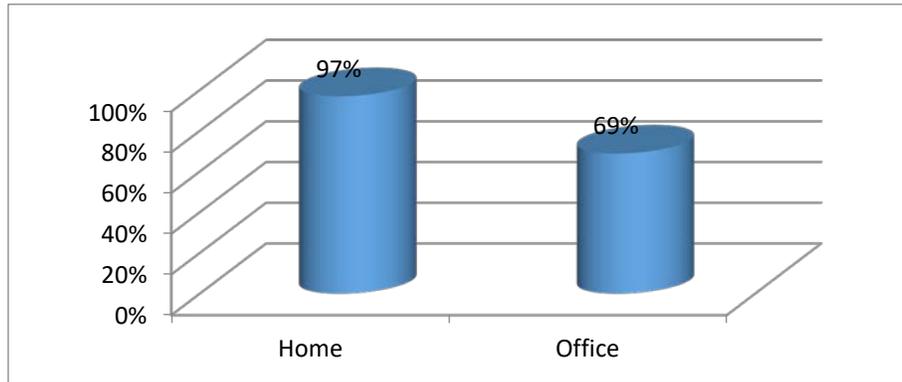


Figure 8 Access to the Internet

3.2.4: Internet Access Type

In terms of the type of connection which teachers use in order to access the Internet, 8 of every 10 teachers make use of wireless Internet (81%), whereas almost half as many rely on a mobile device (44%) for Internet access (Figure 9). Conversely, only 12% of teachers access the Internet through ADSL connection.

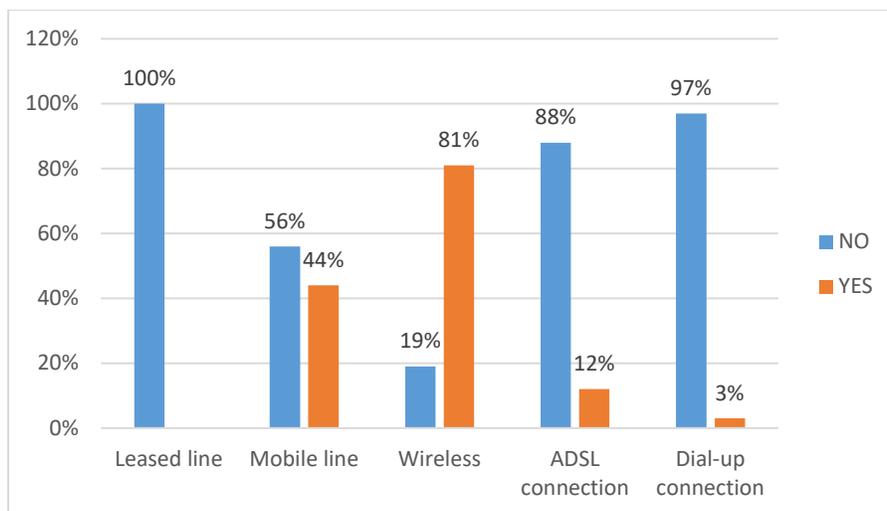


Figure 9 Type of Internet Access

3.2.5: Devices Used for Accessing Internet

In keeping with ownership results, teachers most often access the Internet using a Smartphone (53%), with laptop devices (38%) being the next preferable option (Figure 10). With minimum ownership reporting, tablet devices (6%) and desktop computers (3%) are not commonly used to access the Internet.

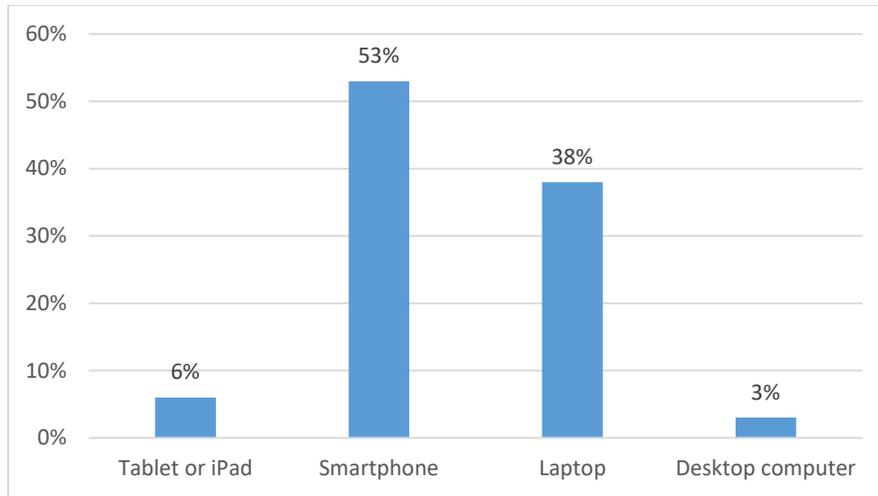


Figure 10 Device frequently used

3.2.6: Broadband Internet Access

In terms of broadband Internet, Figure 11 indicates 66% of respondent teachers indicated access, of which approximately half (56%) reported access in faculty rooms (Figure 12). Difficulties in accessing broadband increase in the library (25%), classrooms (25%) and open areas (16%); access is poorest in seminar halls (6%) and laboratories (3%), indicating that there is work to be done in improving broadband access on the campus overall, but particularly where it limits teacher’s options in seminar halls and laboratories, where this could also be beneficial to students in course delivery.

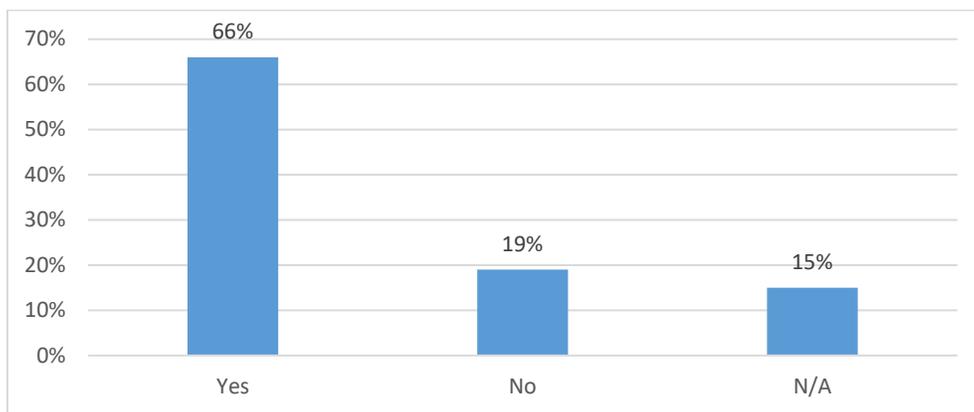


Figure 11 Broadband Internet at the College

3.2.7 WiFi Internet Access

Most teachers (84%) report no WiFi connectivity on campus (Figure 13). This negatively impacts teachers’ ability to integrate technology-enabled resources.

3.2.8: Frequency of Internet Access

Of those, 78% of teachers report using the Internet daily, while only 9% report rare use (Figure 14). This indicates that there may be scope for teachers to be open to options for

use of the Internet and its tools in the teaching-learning process, once skill set and level of comfort is enhanced through capacity building.

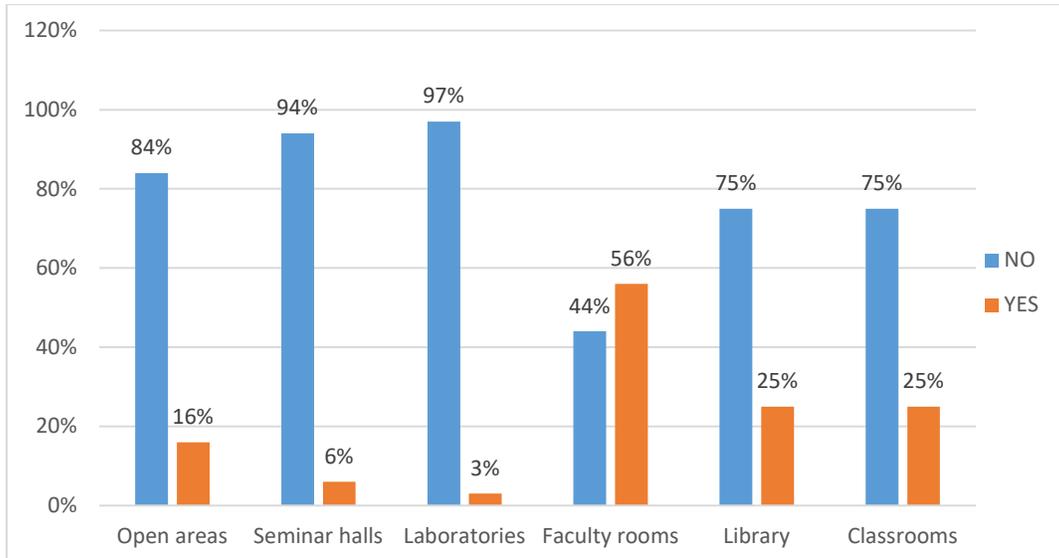


Figure 12 Location of Broadband Access

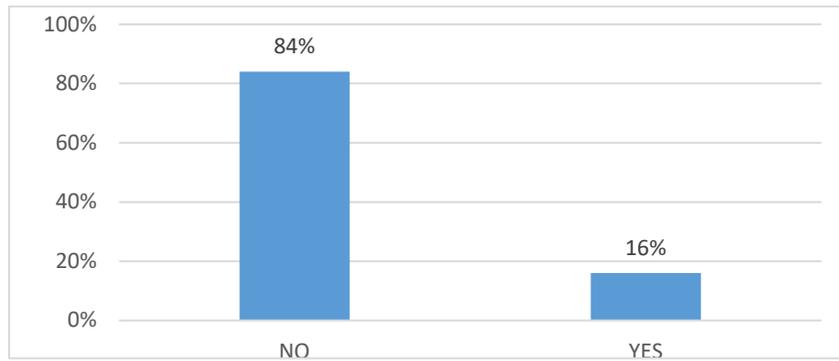


Figure 13 WiFi Internet Access

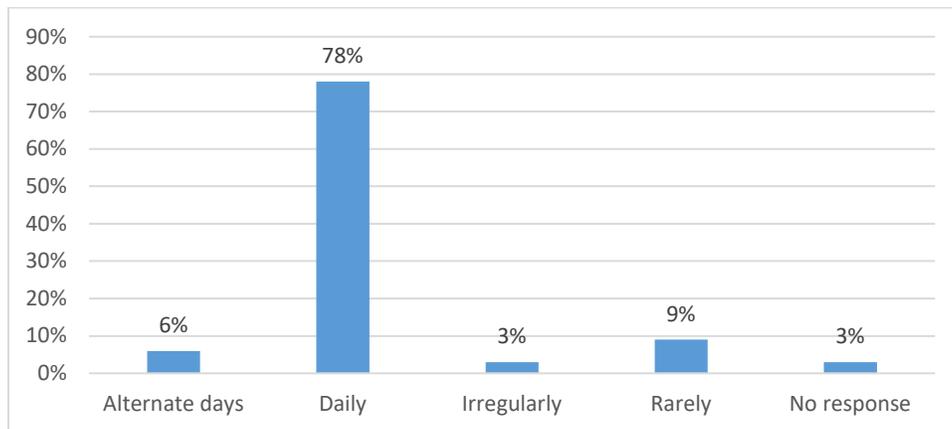


Figure 14 Frequency of Internet use

3.2.9 Computer-Related Skills

There are computer-related skills required when working in a rich teaching and learning environment (Fisher, 2000). Hence the reason for asking the 32 participants to rate their comfort levels with 12 computer-related activities. This was measured using a Likert Scale of five levels: Expertise Level (Trainer), User Level (Advanced), User Level (Intermediate), User Level (Basic) and Non-user Level (N/A). Table 4 shows that teachers' advanced and intermediate skills are mainly in the use of word processor, spreadsheets, presentation software and email.

There are more teachers who are non-users of multimedia authoring, graphic editing, digital audio, video editing, web page design and learning management system. They are basic users and non-user of databases and web 2.0 tools. Conversely, they are rarely expert users of computer-related skills. As a result, it is evident that there is a need for training in just over 50% of the skills. The weighted mean score indicates that overall, the computer skill level is below intermediate level. Only Word processing and email has score over 3 (intermediate). This will make the teachers better prepared to embrace a TEL environment.

Table 4: Computer-related Skills Level

Activity	Expert	Advanced	Intermediate	Basic	Non-User	Weighted Mean score
	%	%	%	%	%	
Word processor (Microsoft Word)	9%	28%	44%	19%	0%	3.28
Spreadsheets (Microsoft Excel)	0%	28%	31%	34%	6%	2.81
Presentation (Microsoft PowerPoint)	6%	22%	50%	16%	6%	3.06
Email	6%	28%	59%	6%	0%	3.34
Databases	0%	0%	16%	41%	41%	1.69
Multimedia authoring	3%	6%	9%	19%	59%	1.66
Graphic editing	3%	3%	6%	19%	66%	1.50
Digital audio	0%	3%	9%	28%	56%	1.53
Video editing	3%	3%	6%	22%	63%	1.53
Webpage design	0%	0%	3%	9%	84%	1.13
Learning Management System	3%	6%	19%	13%	56%	1.78
Web 2.0 tools (wikis, blogs, social networking)	3%	6%	25%	31%	31%	2.09

3.2.10 Use of Social Media

Ninety-one percent (91%) of participants have a social media profile/account (Figure 15). Leaving only 9% not engaged in the use of social media.

As indicated in Table 6, the two social media mostly used are Facebook (88%) and Google+ (41%). On the other hand, the two social media that are hardly used are Blog (3%) and Goodreads.com or similar (6%).

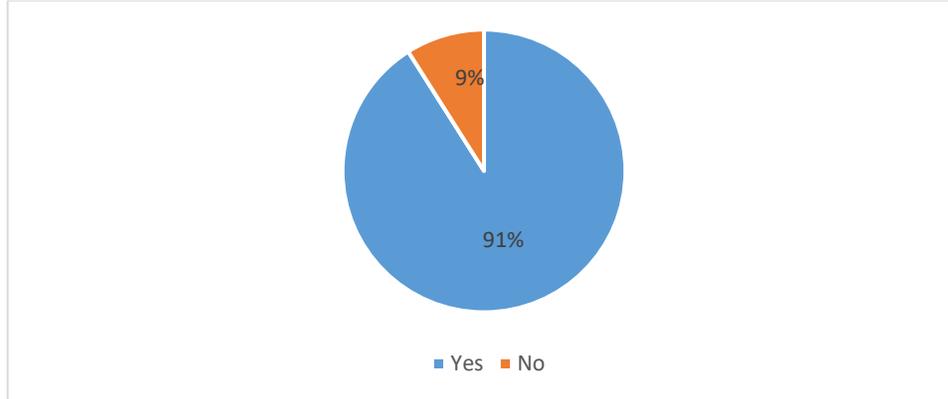


Figure 15 Social Media Profile/Account

Table 5: Social Media Platforms Used

Social Media Choices	Responses
Facebook	88%
Twitter	19%
Google+	41%
Blog (using Blogger or WordPress or within institutional website/CMs)	3%
Slideshare or similar presentation platform	22%
Photo Sharing (Instagram/Flickr/Picasaweb, etc.)	28%
Research Sharing Site (Academic.edu, Researchgate.net, etc.)	28%
Social Bookmarking Sites (Delicious, Scoop.it, Pinterest, etc.)	28%
Goodreads.com (for connecting with authors and readers) or similar	6%

3.2.11 Frequency of Social Media Status Updates

Although the teachers are involved in social media by having an account or profile, it can be concluded that there is not much social media activity. When the teachers were asked how often they update their social media status, 59% indicated that they do not frequently update their social media status (Figure 16). There are 16% who do once a week and another 16% who do once a fortnight. Furthermore, 9% do not update their status.

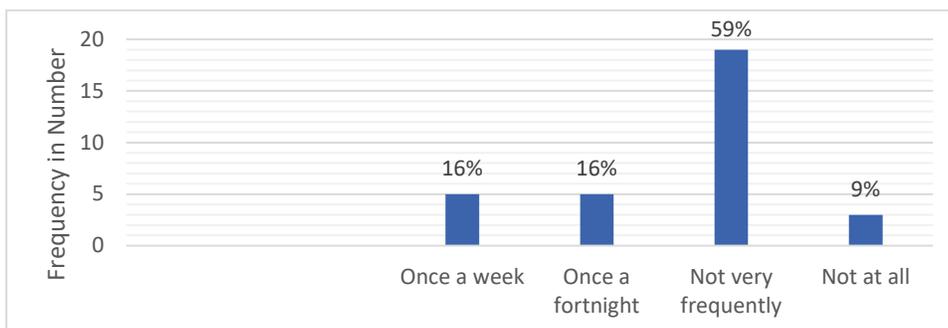


Figure 16 Frequency of Updating Social Media Status

3.2.12 Mailing Lists and Discussion Forums

The teachers' involvement in mailing lists and discussion forums was captured in the survey. Of the 32 respondents, 14% said, "Yes" indicating that they are members of a mailing list or discussion forum (Figure 17), while 13% said, "No". Another 5% provided no answer.

There are 41% of teachers who are members of 1 to 5 e-mail-based discussion forums; 6% for more than five and 53% who did not provide an answer (Table 6). Although the teachers are involved in discussion forums, only 6% are moderators. Also, 38% of the teachers shared that they, "not very frequently" post to the forums. It is interesting that there were large number of no answers to questions related to discussion forum and mailing lists. The findings show that even though there are teachers who are members of e-mailed discussion forums, they are hardly engaged in the forums.

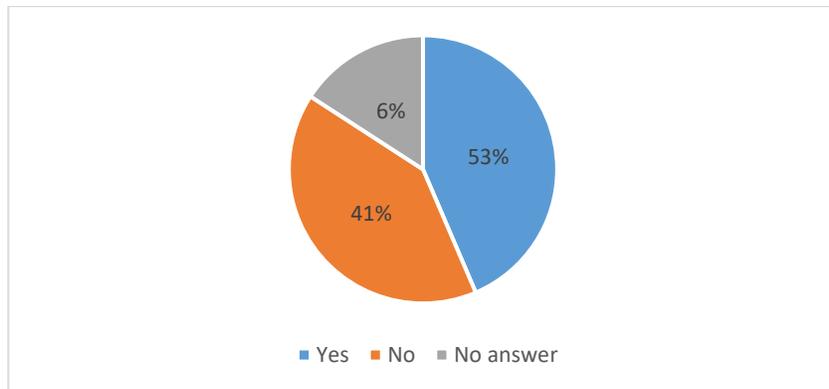


Figure 17 Teachers' Membership in Mailing Lists or Discussion Forums

Table 6: Membership of E-mailed Based Discussion Forums/Mailing Lists

Discussion Forums/Mailing Lists	Responses (%)
Subscribed E-mailed Based Discussion Forum	
1 to 5	41%
More than 5	6%
No Answer	53%
Moderator of E-mailed Discussion Forum	
Yes	6%
No	50%
No Answer	44%
Frequency of Posting to Discussion Forums or Mailing Lists	
Several times a day	0%
Once a day	3%
Once a week	3%
Once a fortnight	0%
Not very frequently	38%
No Answer	56%

3.2.13 Experiences of ICT Resources, Services and Spaces provided by ASC

The respondents' experiences with the resources, services and spaces provided by ASC are varied. Their experiences of e-classroom facilities and computer labs were rated higher among 'Poor', 'Fair' and 'Neutral' (Table 7), while with email services and learning management system 'Fair', 'Neutral' and 'Good', and network bandwidth/speed of Internet and WiFi access 'Poor'. Conversely, with online or virtual technologies, download and use of free and open source software for teaching and learning, access to software and e-portfolio 'Not Available' got the higher rating. On the other hand, support for maintenance and repair of ICTs was one that was relatively rated throughout. The overall weighted mean score for all the services are below satisfactory (Neutral). This clearly shows that there is a need to improve the resources, services and spaces provided by ASC.

Table 7: Experience of ICT Resources, Services and Spaces Provided by ASC

Experience of ICT Resources, Services and Spaces Provided by ASC	Poor	Fair	Neutral	Good	Excellent	Weighted Mean Score
Resources/Services/Spaces	%	%	%	%	%	
E-Classroom facilities (e.g. computers, projection systems, lecture capture systems, SMART boards, etc.)	16%	38%	25%	13%	0%	2.16
Computer labs (for practical and Internet access)	22%	19%	28%	0%	0%	1.44
Email services (institutional)	9%	31%	22%	13%	6%	2.19
Learning Management System (e.g. Moodle, etc.)	6%	38%	13%	25%	3%	2.34
E-Portfolio	9%	6%	19%	6%	0%	1.03
Network bandwidth/speed of Internet (download and upload)	47%	28%	9%	6%	0%	1.56
WiFi access	31%	38%	25%	6%	0%	2.06
Online or virtual technologies (e.g. Network or cloud-based file storage system, Web portals, etc.)	9%	19%	16%	16%	0%	1.56
Access to software (e.g. MATLAB, GIS applications, statistical software, qualitative data analysis, graphics software, textual or image analysis program, etc.)	16%	9%	16%	0%	0%	2.16
Download and use of free and open source software for teaching and learning	6%	19%	25%	16%	0%	1.44
Support for maintenance and repair of ICTs	13%	22%	19%	19%	0%	2.19

3.3 Using ICTs for Teaching and Learning

3.3.1 Nature of Classes at ASC

Teachers were asked to indicate the nature of their classes. The data indicates 84% of the respondents conduct face to face instructions, 3% have completely online courses and 22% have attempted a blended approach to their classes (Figure 18). The results indicate that classes at the ASC mostly adopt face-to-face instruction.

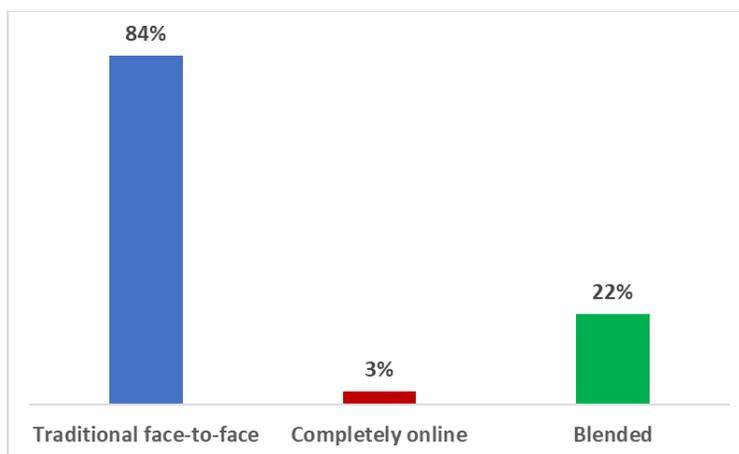


Figure 18 Nature of classes at ASC (Note: Multiple responses.)

3.3.2 Types of Resources

A range of digital resources and platforms are used in teaching and learning at the Antigua State College. Table 8 indicates that Presentations, Word files and digital films e.g. YouTube is most used by teachers, whereas blogs, microblogging and social bookmarking are rarely or never used in the teaching domain.

Table 8: Types of Digital Resources/Platforms used in Teaching

	Always	Often	Sometimes	Rarely	Never
Images (pictures, photographs, including from the Web)	25%	34%	31%	9%	0%
Presentations (e.g. PowerPoint, including from the online sources)	34%	38%	9%	19%	0%
Word Files (activity sheets/handouts/notes)	25%	38%	22%	16%	0%
Digital films/Video (e.g. YouTube)	3%	25%	41%	28%	3%
Audio recordings	0%	6%	9%	56%	28%
Simulations and 2D/3D animation	3%	3%	13%	25%	56%
Learning Management System	16%	9%	22%	13%	38%
Blogs	0%	0%	3%	19%	78%
Social bookmarking	0%	0%	9%	19%	72%
Microblogging (Twitter, Facebook, etc)	0%	0%	0%	25%	75%
Open textbooks	19%	16%	34%	22%	9%
Open Access Research Papers	3%	16%	22%	28%	31%

The respondents were required to indicate the types of teaching and learning materials created and shared. Table 9 indicates that the teachers have created some form of teaching material with 47% indicated the creation of images, 41% creating presentations and 38% word files. However, only 22% created images were shared with an open license, 38% of presentations and 41% of word files. The data could be interpreted that the teachers at ASC do not have a culture of sharing material and when material are shared there is no focus or emphasis on sharing with open licenses. This is also possible due to the lack of training on OER, and skills related to ICTs.

Table 9: Types of Teaching Learning Materials Created and Shared

	Never	Yes, but not shared with others	Yes and shared through an open license	No Response
Images (pictures, photographs, including from the Web)	25%	47%	22%	6%
Presentations (e.g. PowerPoint, including from the online sources)	16%	41%	38%	6%
Word Files (activity sheets. Handouts/notes)	13%	38%	41%	9%
Digital films/Video (e.g. YouTube)	50%	13%	28%	9%
Audio recordings	69%	16%	9%	6%
Simulations and 2D/3D animation	81%	6%	6%	6%
Learning Management System	72%	13%	9%	6%
Blogs	84%	3%	6%	6%
Course Packs	72%	9%	9%	9%

3.3.3 Awareness of OER

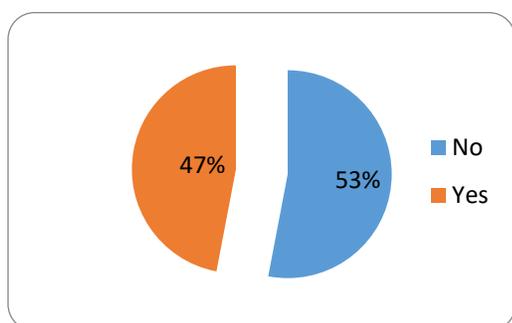


Figure 19 shows that 47% of the respondents are aware of OER although they are not inclined to share their resources with open licenses (Table 9).

Figure 19 Awareness of OER

3.3.4 Awareness of OER Platform

Although 47% of the teachers indicated being aware of OER in their discipline, Table 10 shows that OER platforms and sources are rarely used for teaching and Learning. A further investigation into the reasons for the limited use of OER platforms/sources may be required to get a deeper understanding of the cause for the limited use.

3.3.5 Skills in Integrating Technologies

The respondents indicate a high satisfactory rating in their technology integration skills except in the use of ePortfolio and accessible tools (for people with disabilities) which scores 6% and 3% respectively (Table 11). This could reflect teachers' openness to trying out new technology resources. The data also indicate they have some technology integration skills that can be enhanced with support and guidance. The weighted mean score for all the technology integration issues are below score 3, which indicates that overall, the capacity to integrate ICT for teaching and learning needs huge boost at ASC.

Table 10: Use of OER Platform/Sources for Teaching and Learning

	Often	Sometimes	Rarely	No Response
OER Commons	6%	19%	50%	25%
Saylor Academy	0%	0%	66%	34%
Wiki Educator	3%	9%	53%	34%
Open Stax College	0%	0%	66%	34%
BC Campus Open Textbooks	3%	0%	63%	34%
NPTEL, India	0%	0%	66%	34%
MIT Open Courseware	0%	3%	63%	34%
OpenLearn, UK	0%	6%	59%	34%
College Open Textbook	0%	6%	56%	38%
Directory of Open Access Journals	3%	16%	47%	34%
Director of Open Access Books	3%	6%	56%	34%
MERLOT	0%	3%	63%	34%

Table 11: Skills in Integrating Technologies in Teaching and Learning

	Can't Use	Use to Small Extent	Satisfactorily	Use Well	Use Very Well	No Response	Weighted Mean Score
	%	%	%	%	%	%	
Learning Management System (e.g. Moodle)	16%	31%	41%	0%	9%	3%	2.47
Online collaboration tools (e.g. Adobe, Connect, Google Docs)	9%	22%	34%	22%	9%	3%	2.91
ePortfolio	72%	6%	6%	6%	3%	6%	1.44
eBooks/eTextbooks	16%	22%	34%	19%	6%	3%	2.69
Online video/audio	6%	28%	31%	16%	16%	3%	2.97
Educational games/simulations	25%	31%	22%	9%	6%	6%	2.22
Lecture capture tools	34%	16%	25%	13%	3%	9%	2.06
Accessible tools (for people with disabilities)	84%	6%	3%	0%	0%	6%	1.06
Social media (blogs, wikis, etc.)	28%	31%	19%	9%	3%	9%	2.00

3.3.6 Training and Development

The limited use of technology could be a reflection of the limited training received by teachers. In Figure 20, 72% of the respondents indicated that they have received training on the use of ICTs for teaching and learning. Figure 21 shows the teachers' responses to the college providing regular training on the use of new technologies for teaching.

The data shows only 22% had received some type of technology training through the college. Clearly, if the college intends to propel its teaching and learning domain to address the needs of all learners and equip its learners to meet the demands of a 21st century global environment there is need to focus on training and advancing the ICT skills of its faculty.

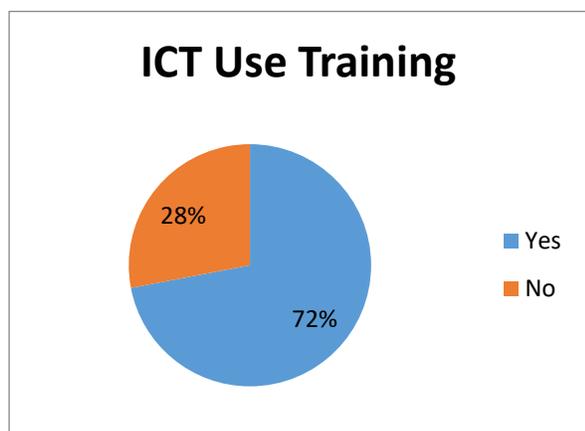


Figure 20 Training in the Use of ICT

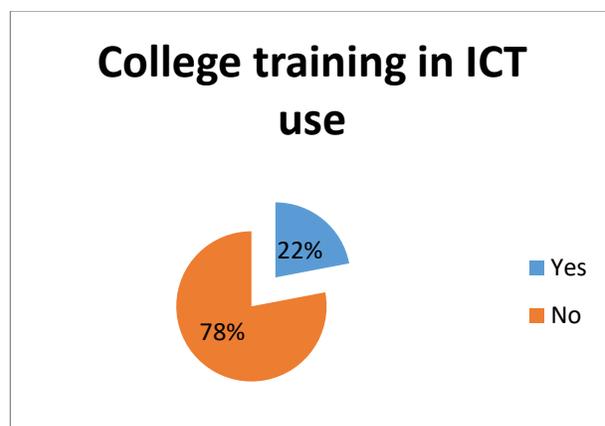


Figure 21 Institutional Training on the Use of New Technologies

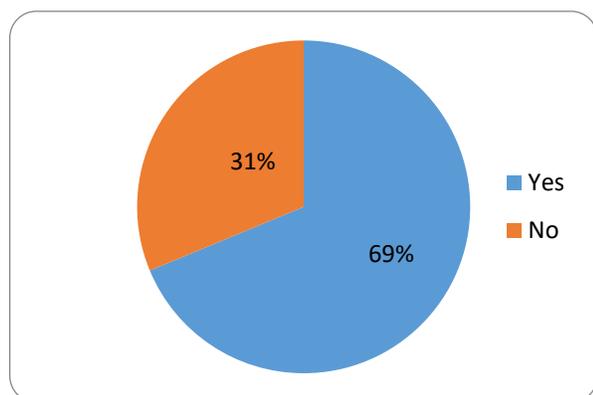


Figure 22 Faculty participated in Online Training

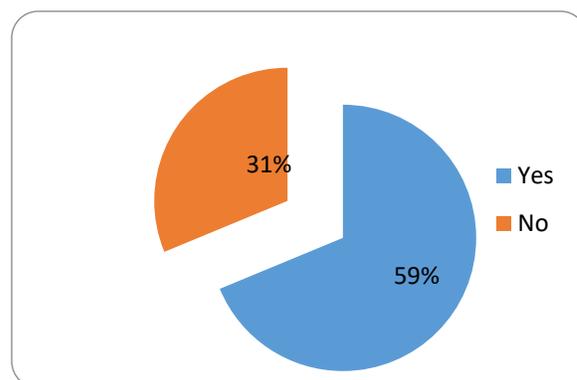


Figure 23 Faculty attending Massive Open Online Courses

Figure 22 shows that 69% of the respondents have participated in online training. However, based on the response to the question on training the use of ICTs it can be concluded that the majority of teachers are exposed to online teaching and learning platforms but are not trained in integration of these platforms in their teaching and learning.

3.3.7 Massive Open Online Courses at ASC

Figure 23 shows that 59% of the teachers have attended a Massive Open Online Course (MOOC). This indicates that the teachers have knowledge of MOOCs and can be trained in the development and use of MOOCs for their teaching environment.

Although the teachers have attended MOOCs they are not aware of various MOOC platforms. The participants were asked to indicate their awareness of different MOOC platforms to include Coursera, Udacity, EdX, iVersity, FutureLearn or none of MOOC platforms. Figure 24 shows that there is some awareness of MOOC platforms among the

teachers; however, 53% of the respondents were not aware of any of the MOOC platforms indicated on the survey.

There is need for training in the benefits, use and development of MOOCs and the use of MOOCs platforms to support the integration of ICTs in the teaching and learning domain at the ASC. The teachers should be fully aware of the various MOOCs platforms that can support the integration of ICTs, reduce the cost of online course delivery and advance the teaching and learning environment of ASC.

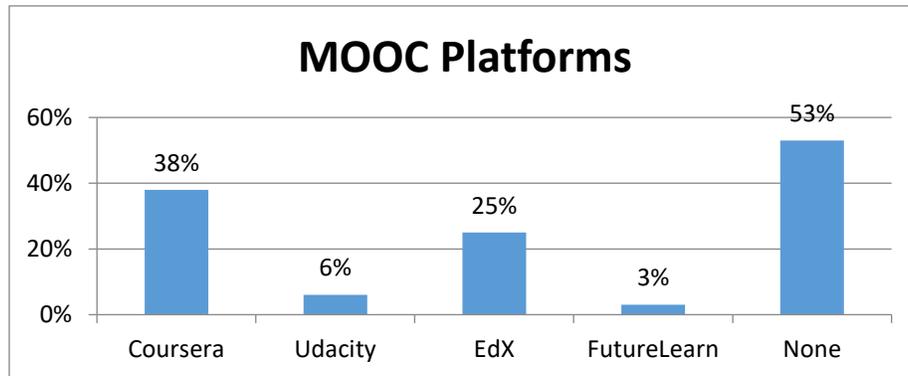


Figure 24 Faculty awareness of MOOC Platforms

3.3.8 Policy Issues for Technology-Enabled Learning

Figure 25 outlines a range of policy issues that needs to be addressed at the Antigua State College to support the implementation of technology enabled teaching and learning. The data reflects that the majority of the teachers are not aware of policies that impact and facilitate the integration of ICTs in teaching and learning. The only policy that 72% of the respondents are aware of is policy dealing with plagiarism.

The development of policies to guide the implementation and integration of ICTs at the Antigua State College are critical for TEL and both teachers and learners must be aware of these policies and play a role in the development of these policies

3.4 Using ICTs for Research and Scholarships

3.4.1 Access to e-Resources in the Library

In response to access to subscription-based e-resources listed, 41% of the respondents replied that the Library provided access to subscription-based e-resources. e-Journals, e-Books, Citation Database, e-Newspapers, e-Theses and Dissertations and Statistical Database are e-Resources available at the library at ASC. An average of 10% of the teachers identified e-journals as the most accessed e-resource accessed at the library followed by e-Books with an average of 9% (Table 12).

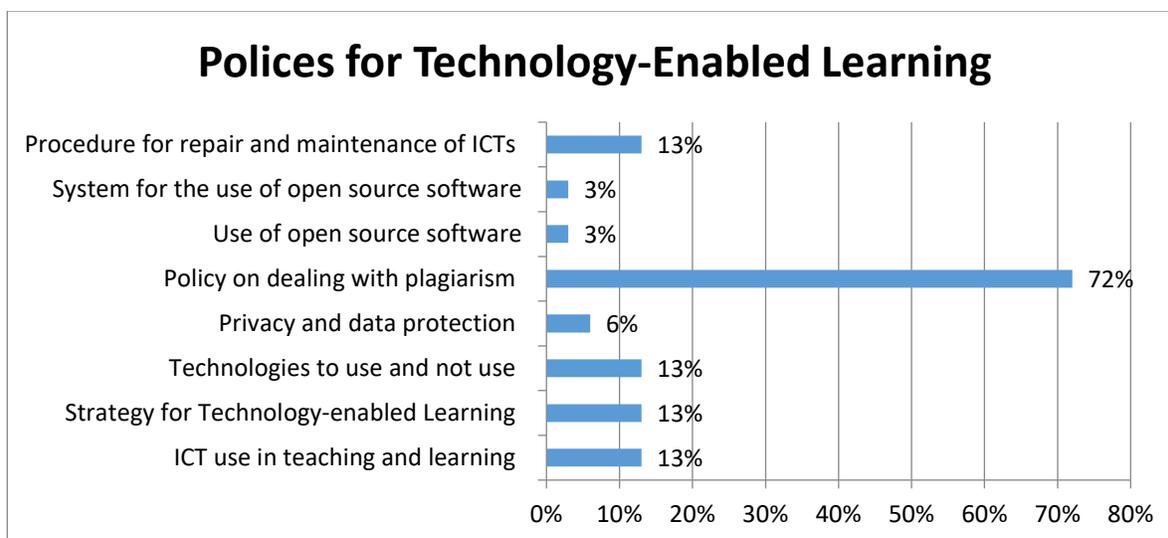


Figure 25 Policy issues for Technology-Enable at ASC

Table 12: Types of library resources regularly accessed

	Often	Sometimes	Rarely
e-Journals	6%	9%	16%
e-Books	0%	9%	19%
Citation databases	0%	6%	13%
e-Newspapers	0%	6%	9%
e-Theses and Dissertations	0%	6%	3%
e-Proceedings of conferences	0%	0%	3%
Statistical databases	0%	3%	0%

3.4.3 Availability of Research Support

The responses to the availability to research support indicates that an average of 14% of the respondents identified plagiarism detection support was available at the college followed by access to data storage at 11% and data visualization at 10%. However, 9% of the responses rated the quality of these research supports as fair or good for access to data storage and 6% rate Plagiarism detection support fair and good (Table 13). The data results reflects that for the College to effectively implement technology enabled learning there needs to be investment and training in research support software.

Table 13: Availability of research support

	Poor	Fair	Neutral	Good
Access to data storage	9%	9%	16%	9%
Data visualization software	16%	0%	22%	3%
Citation/reference management software	16%	6%	16%	0%
Plagiarism detection	19%	6%	25%	6%
Institutional repository for sharing of research	13%	3%	16%	0%
Funds to support open access publications	9%	0%	13%	3%

3.5 Perceptions of Use of Technology-Enabled Learning

3.5.1 Attitude

The respondents were required to indicate their attitude towards the use of Technology-Enabled Learning to solve various educational problems to include access, organisation, time management, collaboration, efficiency, student engagement, communication, pedagogic values and the adoption of technology for student benefit. Most of the respondents indicated that they fully supported and accepted that technology-enabled learning is useful for teaching and learning. Table 14 shows that teachers at ASC are very positive about the power of ICTs and how it can influence teaching and learning. The average score in each of the statements are ore than 3.5 which indicates that either they agree or strongly agree on the usefulness of TEL. This is a strong indicator of readiness by the teachers, who are key stakeholder group in TEL implementation.

Table 14: Attitude towards TEL

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Weighted Mean Score
Technology-Enabled Learning can solve many of our educational problems	50%	22%	22%	6%	4.16
Technology-Enabled Learning will bring new opportunities for organising teaching and learning	38%	53%	9%	0%	4.28
Technology-Enabled Learning can solve many of our educational problems	16%	38%	34%	9%	3.50
Technology-Enabled Learning saves time and effort for both teachers and students	28%	53%	13%	3%	3.97
Technology-Enabled Learning increases access to education and training	38%	56%	0%	6%	4.25
Technology-Enabled Learning increases my efficiency in teaching	19%	66%	9%	6%	3.97
Technology-Enabled Learning enables collaborative learning	16%	31%	44%	9%	3.53
Technology-Enabled Learning can engage learners more that other forms of learning	25%	56%	9%	9%	3.97
Technology-Enabled Learning increases the quality of teaching and learning because it integrates all forms of media: print, audio, video and animation	31%	47%	16%	3%	3.97
Technology-Enabled Learning increases the flexibility of teaching and learning	13%	41%	31%	16%	3.50
Technology-Enabled Learning improves communication between students and teachers	13%	47%	25%	13%	3.50
Technology-Enabled Learning enhances the pedagogic value of course	28%	41%	13%	16%	3.72
Universities should adopt more and more Technology-Enabled Learning for the benefit of their students	50%	31%	19%	0%	4.31

3.5.2 Motivators

The data in Table 15 reflects teachers' motivations to use TEL. Interestingly, there are nor many strong motivators. The most important point is to improve the technology infrastructure that would help in motivations for the teachers to use TEL. Weighted mean

score indicates that the teachers are motivated personally to use technology (highlighted means score after infrastructure), followed by training and workload considerations. Interestingly, credit towards promotion and peer recognition come slower in order as motivators. Therefore, in order to effectively implement TEL, the administration at ASC will need to identify incentives to change teacher's perception of technology use and provide incentives along with training and policies to promote the use of technology.

Table 15: Motivators for TEL

	Very strong motivator	Strong motivator	Average motivator	Weak motivator	Very weak motivator	Weighted Average Score
Personal interest in using technology	16%	50%	25%	3%	3%	3.63
Intellectual challenge	19%	25%	38%	16%		3.25
Self-gratification	16%	31%	44%	3%	3%	3.38
Training on Technology-Enabled learning	16%	38%	31%	13%		3.47
Better Internet bandwidth at workplace	38%	28%	13%	16%		3.69
Credit towards promotion	9%	34%	28%	6%	19%	2.85
Professional incentives to use Technology-Enabled Learning	19%	34%	16%	13%	16%	3.19
Technical support	25%	38%	19%	13%	3%	3.59
Peer recognition, prestige and status	6%	16%	38%	13%	25%	2.56
Improved infrastructure (hardware and software) deployment	34%	25%	25%	9%	3%	3.69
Release time/reduction in existing workload	28%	25%	28%	9%	6%	3.50
To be a trendsetter by early adoption of technology in education	9%	22%	41%	3%	22%	2.84

3.5.3 Barriers

Based on the responses shown in Table 16, poor Internet connection and concern about students' access to technology tops the list of barriers. Barrier with score above 3 may be considered as serious concern for ASC to address. Some of these are concern about faculty workload, lack of training on TEL, and a lack of technical support in the college, lack of policy for TEL, quality of e-courses, security on the Internet, lack of time and lack of instructional design support. Many of these can be removed with adequate training and focus on infrastructure at ASC. Interestingly, the least barrier score is for “intimidated by technology”, which indicates that teachers at ASC do not consider technology use as a barrier to TEL implementation. Like the motivators, they also do not consider lack of professional credits to use TEL as a barrier. Most of them are also self-starters and do not look for role models at ASC to use technology for teaching and learning.

3.5.4 Opens Responses

The respondents open responses shared their concerns for the development of TEL policy and strategy at the College. Technology, teacher perception of TEL and policy were identified as main areas to be addressed to support a TEL environment.

Table 16: Barriers to TEL

	Very strong Barrier	Strong barrier	Average barrier	Weak Barrier	Very weak barrier	Weighted Average Score
Concern about faculty workload	19%	25%	34%	9%	9%	3.25
Concern about students' access to technology	50%	25%	16%	3%	3%	4.06
Lack of training on Technology-Enabled Learning	34%	38%	16%	3%	6%	3.81
Lack of technical support in the College	31%	38%	19%	9%	0%	3.81
Lack of institutional policy for Technology-Enabled Learning	28%	22%	34%	13%	0%	3.56
Lack of professional prestige	13%	13%	22%	22%	25%	2.47
Concern about the quality of e-courses	25%	9%	47%	9%	6%	3.28
Lack of incentives to use Technology-Enabled Learning	16%	19%	22%	22%	19%	2.81
Lack of credit towards promotion	9%	22%	19%	19%	22%	2.50
Intimidated by technology	9%	6%	22%	28%	28%	2.22
Concern about security issues on the Internet	16%	19%	34%	19%	9%	3.03
Inadequate availability of hardware and software	41%	25%	22%	0%	3%	3.72
Poor Internet access and networking in the university	56%	31%	3%	3%	0%	4.22
Lack of time to develop e-courses	34%	19%	31%	13%	0%	3.66
Lack of instructional design support for Technology-Enabled Learning	38%	34%	22%	3%	0%	3.97
No role models to follow	19%	13%	28%	19%	19%	2.84

Technology

The teachers expressed a definite concern with the technology and their capacity to engage with technology-enabled resources. Some of the views expressed by the teachers are:

- *The inclusion of technology can benefit the students tremendously, and the infrastructure is severely underdeveloped.*
- *Technology is not a panacea for the education problems we face. High-quality teacher recruiting and retention (which is linked to remuneration packages and benefits), manageable class sizes.*
- *Books are better for mental retention than e-platforms. While technology-based platforms are useful in the classroom, they should not be the only platform for learning.*
- *There is a need for adequate Internet connectivity as well as resources.*
- *Technology should enhance the learning experience and help solidify the concepts.*

Most of these are key to successful implementation of TEL at ASC. While access to technology needs to be improved, it is important to focus on integration of ICTs and not to put “the cart before the horse”, ie., technology before pedagogy.

Teacher perception of TEL

The teachers' comments on the use of technology outline the need for training and policies to guide the TEL implementation. The comments below identify some of the concerns of the teachers and their perceptions about TEL:

- *All their courses are based on some kind of electrical/technology platform; unfortunately, the students are encouraged to use the same social networking and entertainment tool as they use for education. This creates a mental block when it comes to information retention.*
- *Online platforms are great at allowing people to work at their own pace, but this slows down the class.*
- *The present batches of students are not accustomed to online learning, so it is difficult to convert after 11 years in the classroom.*
- *Technology, as we have seen, can widen the gap between the haves and the have nots. We have not even got the basics right yet.*

These are genuine concerns that need to be addressed. Training of teachers as well as students will help reduce the concerns to a great extent. Many of the misconceptions can also be removed through practice.

Policy

Clear policies are needed to guide the technology process at the college. The teachers express their concerns about the acquisition of technology resources.

- *There must be a clear policy and strategy moving forward, and more instructors would probably utilise technology a bit more consistently. Such a strategy should include quickly putting in place all necessary infrastructure for seamless Internet access by faculty and students, as well as efficient support for a major LMS system, and training and encouragement to all faculty to incorporate a digital component into their courses so that students can have useful experience with relevant technologies upon leaving the institution.*
- *There is a need for adequate Internet connectivity as well as resources and policies to support these technological developments. ... I know once that [policy] is in place, not only will our classrooms be more dynamic and engaging to all types of learners but they will be able to continue learning outside of the class from anywhere on the campus.*
- *TEL policy and strategy is a great need in the college for raising the proficiency levels of both student and teacher in the era and beyond.*
- *Yes. Even participating in this survey has been an eye-opening experience as it holds up the mirror of the realities and components which interplay - particularly at ASC concerning overarching regulations and library resources - in developing and effectively implementing Technology-enabled learning policy and strategy.*
- *I remember 'on paper' we looked at a general ICT policy; however, I do not recall that we looked at a Technology-Enabled Learning policy and strategy. As a result, yes, there is a need to develop a Technology-Enabled Learning policy and strategy, especially since we are now doing full online courses.*

Summary

The majority of the respondents were females (78%) and 22% were males. While most (75%) teach in the Associate degree programme with varying levels of teaching experience, 38% hold a bachelor's degree as their highest qualification followed by 28% with a master's degree.

Teachers are strong advocates for face to face instruction although they see the benefits in the use of technology there is still resistances to change. They expressed the lack of training, inadequate internet access, lack of device as concerns towards using technology-enabled learning. Creation of policies to guide and inform the process could help to alleviate some to concerns expressed by the teachers in relation to their use of technology-enable resources. Training, technical support, and peer recognition can act as motivators for teaches technology whereas instructional design support, and unavailability of adequate hardware and software are barriers to their technology use. Overall, teachers are positive and ready to adopt TEL practices provided issues with access to technology and training are resolved.

Chapter 4 Learners' Use of Technologies for Learning

4.1 Learners Profile

4.1.1 Age and Education of Respondents

Table 17 shows that majority of the students (86%) were below age 20, 4% were age 21-25 while the rest opted not to reveal their age group. Thirty-nine respondents (70%) were members of the Associate Degree programme, fifteen (27%) were doing the Certificate programme and two (4%) did not indicate their level of study. Overall twenty-three (40%) of respondents were male, twenty (54%) were female.

Table 17: Ages and Education of Respondents

Age	Female	Male
Below 20	48%	38%
21- 25	2%	2%
Level of Study		
Certificate programme		27%
Associate Degree programme		70%

As depicted in Table 18, most of the respondents are Year One (51%) and Year Two (35%) students. Social Sciences and Engineering & Technology are the two largest faculty disciplines being undertaken by respondents, with seventeen students (30%) and sixteen students (26%) respectively for each. Natural Sciences follow these two disciplines with (18%), while the other faculty disciplines share the remaining students.

Table 18: Faculty Discipline and Year of Study

Faculty Discipline	Female	Male	Total
Humanities	7%	2%	9%
Social Sciences	14%	16%	30%
Commerce and Management	7%		7%
Natural Sciences	16%	2%	18%
Engineering and Technology	5%	21%	26%
Other	2%		2%
Year			
Year 1	30%	21%	51%
Year 2	21%	14%	35%
Year 3		2%	2%
Year 4		2%	2%
No Response	2%	2%	4%

4.1.2 Faculty Discipline and Year of Study

4.1.3 Mode of Study

Traditional face-to-face was the method via which thirty-nine respondents (70%) were receiving learning instructions. Nine students (16%) responded that they study completely online. Six students (11%) indicated that they were engaged in blended learning, while two (4%) choose not to respond.

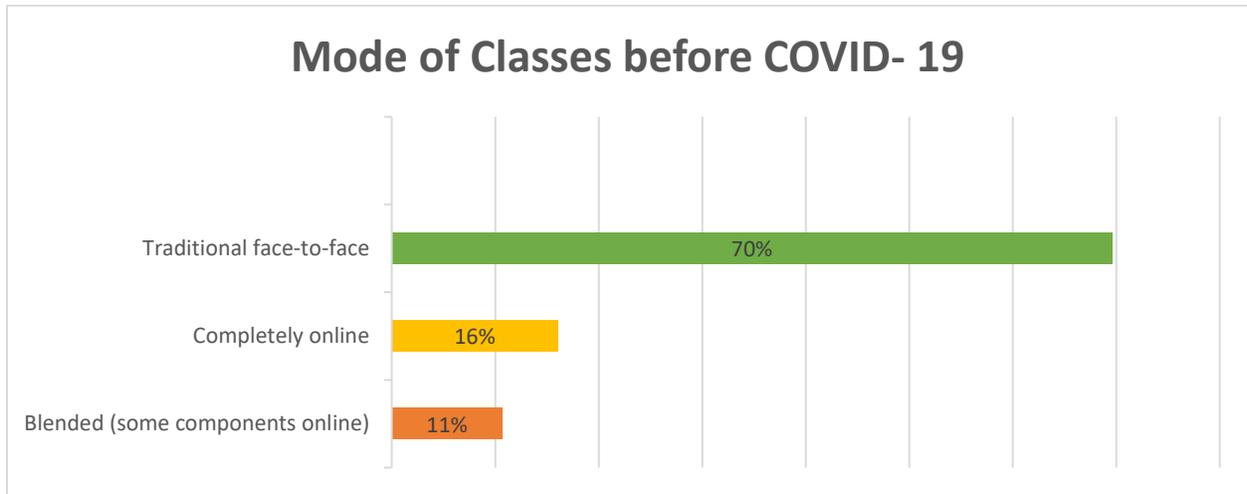


Figure 26 Mode of Study

4.2 Access to and Use of Information and Communication Technologies (ICTs)

4.2.1 Ownership of and Access to ICTs

Ownership of Devices

Learners were asked about their ownership of devices: desktops, laptops, smart phones and tablets. The data reveal that most of the learners have access to at least one ICT device. Majority of them (93%) own a Smartphone, while 80% own a laptop; 21% own a desktop and 25% own a tablet (Figure 27). Learners who own neither a desktop (13%), laptop (9%) nor Smartphone (4%) plan to obtain one within the next 12 months.

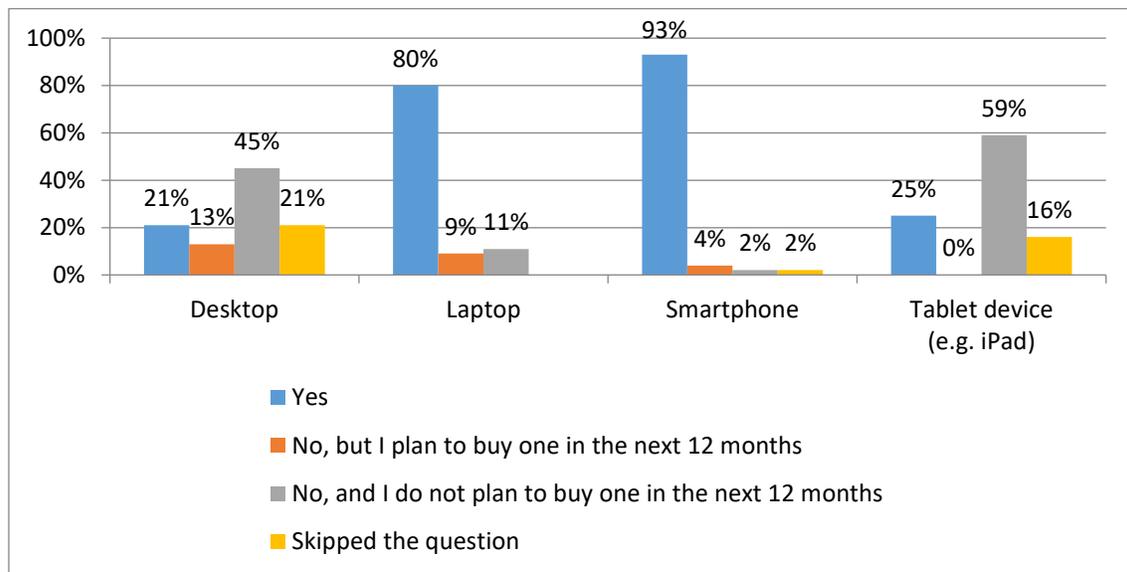


Figure 27 Ownership of Devices

4.2.2 Access to Devices at ASC

Learners were asked whether they had access to devices at the ASC. Of the four devices accessible at the College, most of the learners (64%) indicated that they have access to desktops (Figure 28). Only 9%, 4% and 2% of learners said that the College provides laptop, Smartphone and tablet, respectively. However, many learners use their own devices at the College: 73% smartphones; 63% laptop and 27% tablet. These results suggest that a policy that allows for learners to use their own devices on campus will facilitate the implementation of Technology-enabled Learning. Interestingly, the responses of some learners indicate that the College does not allow them to use desktops (11%), laptops (16%), smart phones (14%) nor tablet devices (39%).

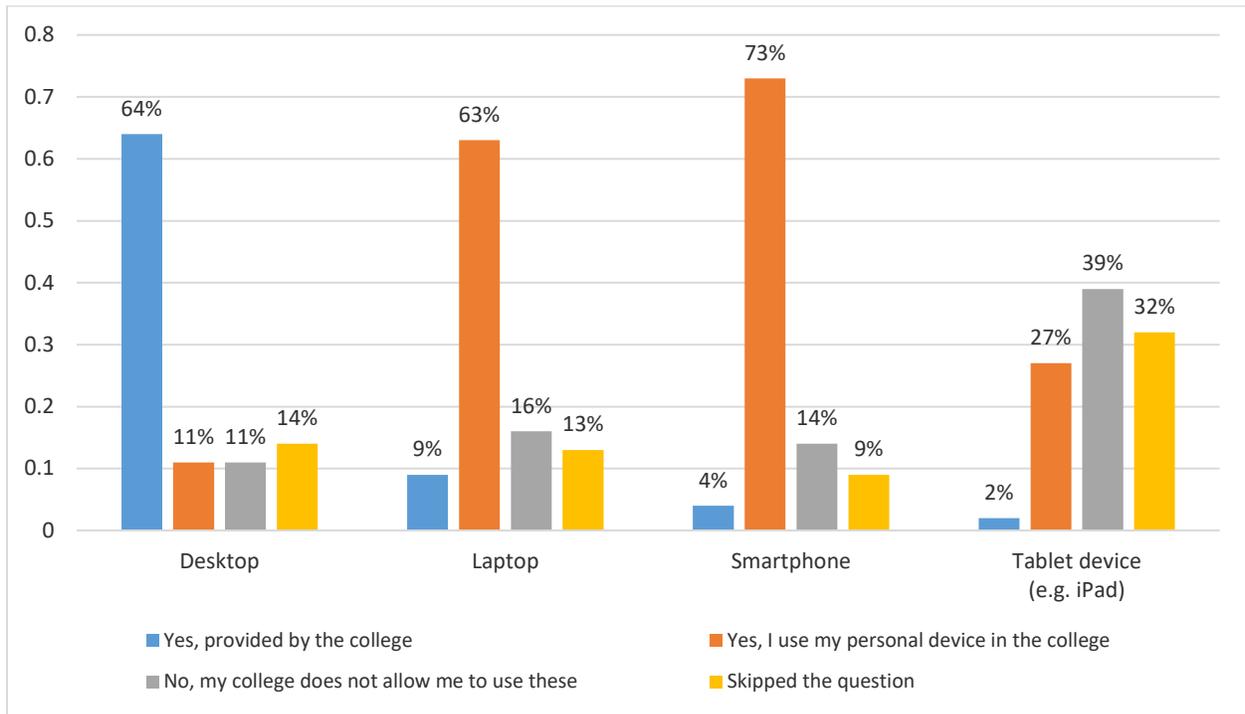


Figure 28 Access to Devices at Antigua State College

4.2.3 Internet Access

Places to Access the Internet

When asked where they access the Internet, the majority of learners (89%) indicated from home, with 30% obtaining access from the College; very few learners (5%) have access from cyber cafes while 7% have no Internet access at all (Figure 29).

4.2.4 Mediums Used to Access the Internet

The most commonly used medium to access the Internet, according to Figure 30, is Wi-Fi (75%), followed by mobile devices (43%). ADSL connection, dial-up connection and leased line are used by few learners (11%, 9% and 4%, respectively).

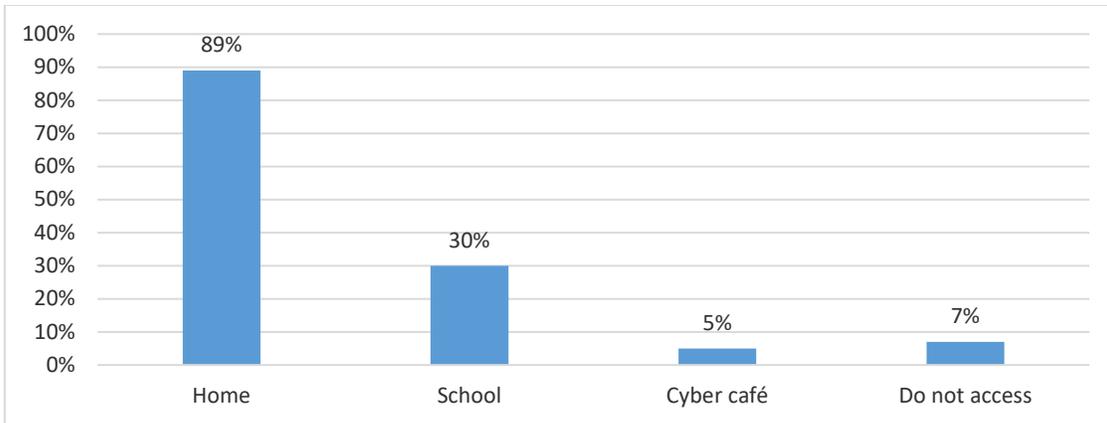


Figure 29 Access to the Internet

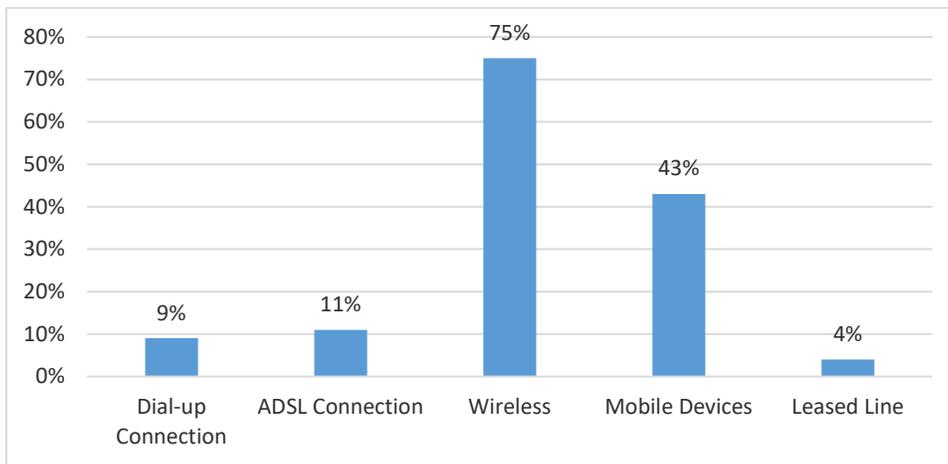


Figure 30 Mediums to Access the Internet

4.2.5 Device Used Frequently to Access the Internet

Inquiry into the device learners use more frequently to access the Internet revealed that the majority of learners (76%) use Smartphone while 20% use laptops (Figure 31). Very few learners (4%) use desktop computers frequently.

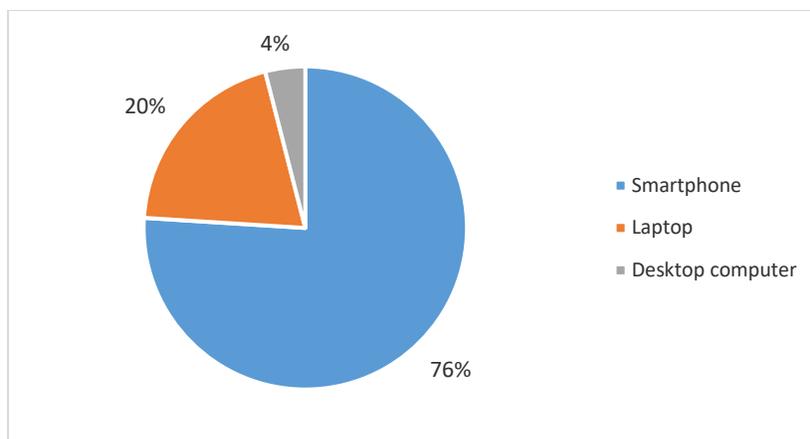


Figure 31 Devices to Access the Internet

4.2.6 Broadband Internet Connectivity

Most of the learners (73%) said they access broadband connectivity at home while 16% access it at the College (Table 19). However, 84% of these learners also said that they do not have access to broadband. The inclusion of the option “Do not access” seemingly has caused some confusion with the way learners responded to the question.

Table 19: Access to Broadband Internet Connection

Place	Yes	No
Home	73%	27%
School	16%	84%
Cyber café	4%	96%
Do not access	16%	84%

4.2.7 Access to Broadband Connection at Antigua State College

Learners accessed broadband Internet connection (Figure 32) from the library (50%), open areas (27%), classrooms (21%), faculty rooms (9%) and student’s common rooms (7%). However, Table 19 shows that only 16% of learners said that they have access to broadband Internet at the College. The data also revealed that learners do not have access to broadband Internet in the laboratories, reception lounge and seminar halls.

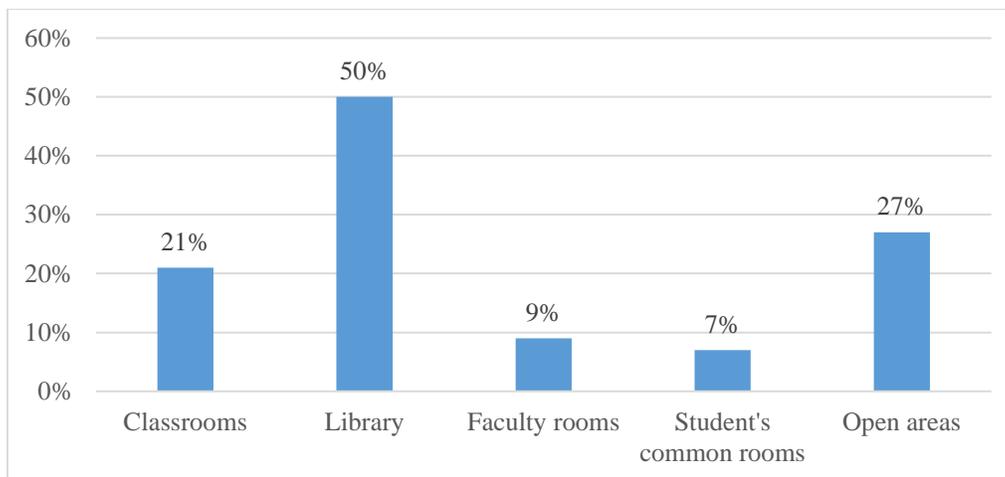


Figure 32 Access to Broadband Connection

4.2.8 WiFi/Wireless Internet Connectivity

Learners were asked whether they have access to Wifi/wireless connectivity at the College. Most of the learners (63%) have no access with the remaining 37% indicating they have access (Figure 33). Data was not captured regarding the place(s) where these 37% of learners access Wifi.

4.2.9 Use of the Internet

Seventy-six percent (66%) of learners use the Internet daily and 4% on alternate days (Figure 34). This implies that the majority of learners are frequent Internet users. However, 18% of learners reported that they irregularly (7%) or rarely (11%) use the Internet.

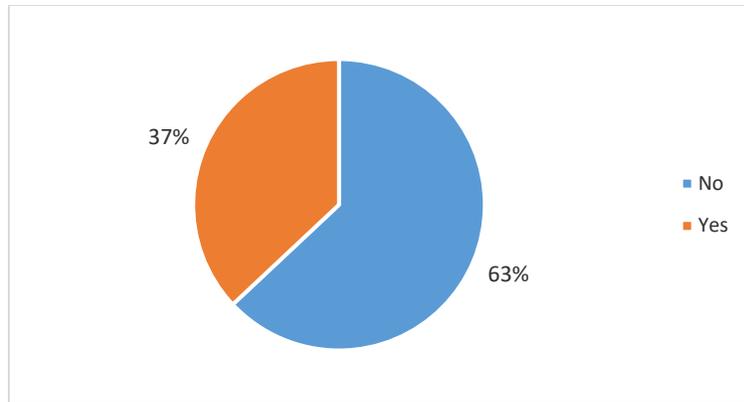


Figure 33 Wifi/Wireless Connectivity

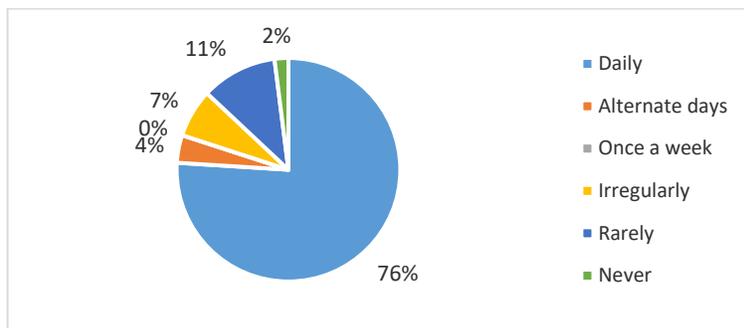


Figure 34 Frequency of Internet Use

4.2.10 Time Spent on Internet-related Activities

Most of the learners (52%) spend at least three hours on the Internet on a daily basis; 16% spend one to two hours while 11% of learners either spend less than an hour or do not use the Internet daily (Figure 35).

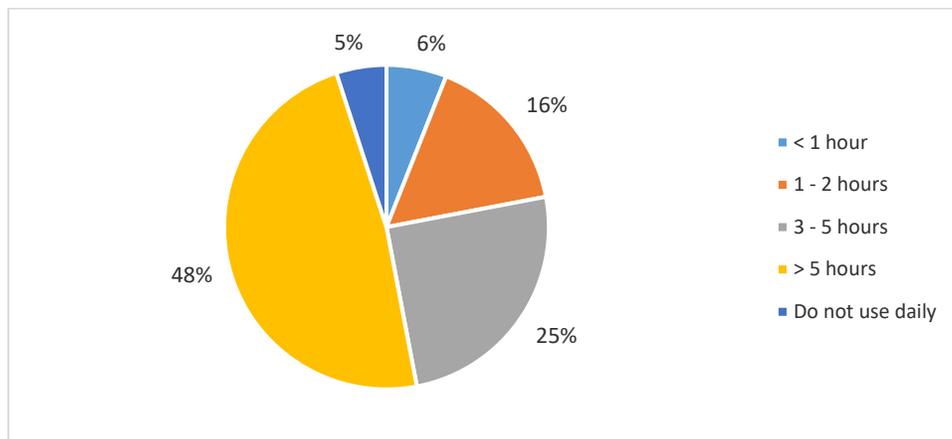


Figure 35 Average Time Spent on Internet-related Activities

4.2.11 Computer Proficiency and IT skills

ICT skills constitute an important component of the development of our learners. According to Table 20, most learners indicated that they have strong skill set in the use of Word Processors, Spreadsheets, PowerPoint, search engine use and email with an average of over 3 score. These tools are critical components of the teaching learning experience and requires a higher level of competency to effectively engage in a technology-enabled environment. However, the results also indicate that most learners have difficulty using Learning Management Systems and other ICT tools with an average rating ranging below 3 in the mean score. Therefore, this skill-deficiency in using technology enabled tools should be addressed before students are invited to these platforms and tools.

Table 20: Computer Proficiency and IT skills

ICT skill	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	Weighted Mean Score
Word processor	52%	20%	18%	5%	2%	4.13
Spreadsheets	27%	21%	29%	16%	5%	3.49
PowerPoint	41%	25%	14%	14%	2%	3.93
Email	55%	25%	13%	2%	4%	4.23
Database	11%	23%	20%	23%	20%	2.81
Multimedia	0%	14%	9%	43%	7%	2.41
Graphic editing	4%	5%	11%	25%	50%	1.81
Digital audio	2%	9%	18%	25%	38%	2.04
Video editing	7%	4%	18%	34%	29%	2.20
Webpage design	0%	2%	9%	18%	61%	1.46
LMS (e.g., Moodle)	0%	5%	14%	18%	50%	1.71
Web 2.0 tools (wikis, blogs, social networking)	7%	16%	13%	18%	32%	2.40
Search engines	54%	20%	7%	9%	5%	4.13

4.2.12 Social Media Use

The use of social media has become a prevalent feature among learners. At the ASC, 96% of learners expressed that they use social media. Facebook is the most popular social media platform among the learners with 74% use. Therefore, this platform might be ideal for sharing college-related announcements that affect the learners. Table 21 highlights that 68% of learners use photo sharing platforms while only 26% use research-sharing sites. Although most learners spend between 1-5 hours on social media platforms, 68% stated that they do not post frequently (Table 22). This suggests that the content consumption of the learners at ASC is much higher than the content generation.

Table 21: Social Media Use

Social media platform	Percentage of student use
Facebook	74%
Twitter	32%
Google+	45%
Blog (using Blogger or WordPress or within institutional website or content management system)	2%
Slide Share or similar presentation platform	9%
Photo sharing (Instagram/Flickr/Picasaweb, etc)	68%
Research-sharing site (Academic.edu, Researchgate.net, etc.)	26%
Social bookmarking sites (Delicious, Scooplt, Pinterest, etc.)	42%
Goodreads.com (for connecting with authors and readers) or similar	4%

Table 22: Frequency of Social Media Use

Frequency of update	Percentage
Several times a day	6%
Once a day	6%
Once a week	2%
Once a fortnight	8%
Not very frequently	62%
Not at all	17%
Average time spent of social media per day	
<1 hour	13%
1 - 2 hours	30%
3 - 5 hours	36%
>5 hours	13%
Do not use daily	8%

4.2.13 Access to Online Discussion Forums

Only 15% of learners use mailing lists and discussion forums. Of that 15%, only 27% of those learners are moderators of these discussion forums/ mailing lists (Table 23). Additionally, of that same subset, 80% of those learners are subscribed to 1-5 different email-based discussions. Once more, content generation among the learners at ASC remains low with 80% of learners not posting to discussion forums very frequently.

Table 23: Frequency of Posting to Discussion Forums

Frequency of posting to discussion forums/ mailing lists	Percentage
Once a day	13%
Once a fortnight	7%
Not very frequently	80%

4.2.14 Experience in a TEL Environment

This section highlighted some of the deficiencies in ASC’s ICT infrastructure. There is no category of resource/service in which the learners ranked an overall good score. The resource that the learners disapproved of most was the Wi-Fi access. In this category, 83% (combined) of learners expressed some form of dissatisfaction (Table 24). In addition, approximately 77% of learners expressed dissatisfaction with the speed of the internet. Reliable Internet access is a fundamental component of a TEL environment since it impacts most of the other services and based on the data internet infrastructure is a major deterrent for using technology resources. The lack of reliable Internet access clearly has

negatively impacted the use of technology enabled resources. ASC with great urgency needs to address the inadequacy of the internet on campus to effectively engage in TEL.

Table 24: Experience with Technology-Enabled Resources

Resource/Service	Poor	Fair	Neutral	Good	Excellent
e-Classroom facilities	18%	21%	34%	14%	4%
Computer labs	13%	20%	25%	30%	7%
Email services	9%	20%	23%	27%	11%
Learning Management System	18%	20%	21%	27%	4%
ePortfolio	14%	16%	20%	4%	2%
Network bandwidth/speed of Internet	43%	25%	13%	7%	0%
Wi-Fi access	54%	20%	9%	7%	0%
Online or virtual technologies	20%	23%	20%	4%	4%
Access to software	14%	18%	21%	2%	0%
Download and use of free and open-source software for teaching and learning	25%	16%	20%	9%	2%
Support for maintenance and repair of ICT	27%	14%	18%	9%	0%
Access to data storage	5%	25%	29%	5%	0%
Data visualisation software	11%	18%	29%	4%	0%
Citation/reference-management software	13%	21%	21%	2%	0%
Plagiarism detection software	14%	9%	18%	14%	25%
Institutional repository for research sharing	16%	14%	18%	7%	0%
e-Journals	16%	13%	14%	0%	0%
e-Books	14%	14%	16%	11%	0%
Citation databases	11%	11%	21%	2%	0%
Bibliographic databases	9%	14%	21%	5%	0%
e-Newspapers	18%	11%	20%	7%	0%
e-Theses and dissertations	14%	13%	13%	4%	0%
Patent databases	14%	13%	18%	0%	0%
e-Proceedings of conferences	13%	13%	20%	4%	0%
Statistical databases	9%	16%	21%	2%	0%

4.2.15 Experience with Online Courses/MOOCs

Only 32% of learners at ASC have ever taken an online course. This may be as a result of lack of access to a technology-enabled learning environment. Table 25 indicates that 65% of learners are not sure what is meant by the term MOOC. This is likely to change as more students transition to online platforms.

Table 25: Experience with Online Courses/MOOCs

Experience with MOOCs	Responses
No, and I don't know what a MOOC is	65%
No, but I do know what a MOOC is	12%
Yes, but I didn't complete it	17%
Yes, and I completed it	6%

4.3 Perception of use of Technology-Enabled Learning

4.3.1 Learner Perception of Technology use in Studies

The students were required to indicate their perception of the use of technology in their studies. The majority of the students strongly agree or agree that the use of technology enhances their skills and equips them for the globalized environment and job market. In Table 26 the results indicated that an average 43% of the respondents strongly agree that

technology use will improve their IT skills and 32% strongly agreed that technology improve their collaboration and career prospects. The learners at ASC are open to the use to technology in their studies. The students are digital natives whose lives revolve around the use and interaction with technology.

Table 26: Student Perception of Technology use in Studies

	Strongly agree	Agree
It will help me get better results in my subjects	32%	32%
It will help me understand the subject material more deeply	25%	34%
It makes completing work in my subjects more convenient	41%	32%
It motivates me to explore many topics I may not have seen before	25%	30%
It allows me to collaborate with others easily, both on and outside of the campus	32%	45%
It will improve my IT/information management skills in general	43%	41%
It will improve my career or employment prospects in the long term	34%	43%

4.3.2 Usefulness of technology for learners

Learners at ASC strongly agree or agree that technology has an important role in their learning to prepare them to meet the challenges of the technology driven environment. Educators should be aware of students' perception of technology use and use this information to direct their teaching and learning practices. Table 27 shows what the elements of technology are that student prefer to use in their studies. This could sever as a guide to the teachers in appropriately integrating technology in teaching and learning. Organising the TEL services around the interests of the learners will have biggest impact.

Table 27: Usefulness of Technology in Studies

	Very useful	Useful	Neutral	Useful to a limited extent	Not at all useful
Design and build Web pages as part of your course?	13%	21%	20%	16%	11%
Create and present multimedia shows as part of your course requirements (e.g., PowerPoint)?	39%	32%	13%	4%	4%
Create and present audio/video as part of your course requirements?	18%	36%	21%	13%	5%
Download or access online radio/video recordings of lectures you could not attend?	50%	25%	11%	7%	4%
Download or access online audio/video recordings to revise content of lecturers you have already been to?	54%	20%	13%	7%	2%
Download or access online audio/video recordings of supplementary content materials?	38%	38%	9%	7%	4%
Use the Web to access college-based services (e.g., enrollment, paying fees)?	41%	32%	11%	9%	2%
Use your mobile phone to access web-based college services or information (e.g enrolment, paying fees)?	39%	32%	16%	7%	0%

Use instant messaging/chat (e.g. Skype, Messenger, Hangout, etc) on the Web to communicate/collaborate with other students in the course?	34%	29%	20%	7%	4%
Use a social media networking platform (e.g Facebook) on the Web to communicate/collaborate with other students on the course?	21%	30%	32%	7%	2%
Use microblogging (such as Twitter) to share information about class-related activities?	7%	16%	27%	14%	21%
Keep your own blog as part of your course requirements?	5%	9%	27%	20%	18%
Use instant messaging/chat (e.g. Skype, Messenger, Hangout, etc) on the Web to communicate with teachers and administrative staff from the course	25%	43%	16%	5%	4%
Contribute to another blog as part of your course requirements?	4%	11%	32%	9%	21%
Use the web to share digital files related to your course (e.g. photos, audio files, movies, digital documents, websites, etc)?	23%	39%	23%	5%	0%
Use web-conferencing or video chat to communicate/collaborate with other students in the course?	25%	38%	16%	9%	2%
Receive alerts about course information (e.g. timetable changes, the release of new learning resources, changes in assessment) via RSS feeds on the web?	45%	23%	13%	5%	2%
Receive alerts about course information (e.g. timetable changes, the release of new learning resources, changes in assessment) via text message on your mobile phone?	50%	25%	13%	5%	0%
Contribute with other students to the development of a wiki as part of your course requirement?	9%	20%	32%	13%	9%
Receive grades/marks from your lecturer via text message on your mobile phone?	36%	29%	16%	14%	0%
Receive pre-class discussion questions from your lecturer via text message on your mobile phone?	32%	30%	11%	11%	7%
Use a personal dashboard on the college intranet to access all your academic information related to courses, grades, etc.?	38%	38%	11%	4%	0%
Use an ePortfolio system to record your achievements for future use beyond the course of your studies?	39%	32%	11%	2%	2%

4.3.3 Learners' perceptions of using technology in education

The learners are open to the use to technology in teaching and learning. Table 28 further indicates learners' perception of using technology in education. The results show that learners at ASC are positive about the sue of technology. Only about 20% think they would

skip classes because of availability online resources. About one third of the learners are concerned about mobile use in classroom, while one-fourth of them consider that technology interferes in the way they deeply engage in the studies. While majority of the learners are positive, those who are uncomfortable with technology needs to be trained to use technology appropriately. 54% of the respondents wish that their teachers integrate more technology in teaching and learning. 68% of them are also concerned about the cyber security issues and ASC will have to develop appropriate mechanism to deploy technology for teaching and learning in a secured way that respect student privacy.

Table 28: Learners’ Perceptions of Using Technology in Education

	Strongly agree	Agree
I get more actively involved in courses that use technology.	16%	29%
I am more likely to skip classes when materials from course lectures are available online.	9%	11%
When I enter college, I was adequately prepared to use the technology needed in my courses.	11%	55%
Technology makes me feel connected to other students.	9%	29%
Technology makes me feel connected to teachers.	7%	36%
Technology interferes with my ability to concentrate and think deeply about subjects I care about.	5%	20%
I am concerned that technology advances may increasingly invade my privacy.	16%	43%
I am concerned about cyber security (password protection and hacking).	29%	39%
In-class use of mobile devices is distracting to my teacher.	13%	27%
Use of tablets/laptops in class improves my engagement with the content and class	7%	43%
Multitasking with my technology devices sometimes prevents me from concentrating on or doing the work that is most important	20%	39%
When it comes to social media (e.g. Facebook, Twitter, LinkedIn), I like to keep my academic life and social life separate	36%	38%
I wish my teachers in the university would use and integrate more technology in their teaching.	20%	34%
Technology makes me feel connected to what's going on at the college/university.	11%	45%
In-class use of mobile devices is distracting to me.	5%	27%

4.3.4 Open ended Response

Although the students are open to the use of technology, they have some valid concerns with the use of technology at the ASC. The major issues highlighted in the comments of the students were teacher interaction with technology and Internet access. Students responding to the open-ended question on the need to improve the TEL environment at the college provided some insights on areas that need to improve their learning experience.

Teacher Interaction

Most of the respondents provided a negative feedback on how teachers interact with technology. The respondents’ comments on teacher interaction with technology are highlighted below.

- *“teachers also do not answer emails requesting help”*
- *“Not all lectures are tech-savvy”*

The student comments on teacher interaction reflects a need for teachers to be trained in the use and integration of technology to better guide, support and enhance the students learning experience.

Internet Access

The lack of adequate Internet access is a major problem facing the students at the college. Many have indicated that improved Internet access would add to their learning experience.

- *“Yes, technology should be improved especially the Internet access”*
- *“I feel as though students should not have to suffer because they don't have a strong Internet or a device which allows them to go online. Some teachers need to take that into consideration.”*
- *“need to make the wifi accessible by students”*

Devices and areas to access the Internet

With little or no wifi access available for student use, the students seek to use areas where computers are available. However, this is also a challenge as there are limited areas provide for students to use computers and access to the Internet for learning activities.

- *“because students do not have access to WiFi and as a result of this, the desktop computers in the library are almost always occupied. This therefore prevents me from being efficient and possibly completing an assignment at school or researching deeper information into the topic that I am currently learning.”*
- *“I am very much aware that those in authority at the ASC are doing their best, so that their students are able feel connected and somewhat at ease.”*
- *“although most of the time the courses we do are practical, ... the use of technology can make the learning experience smoother”*

Summary

The students at ASC are technology users and expressed that the use of technology would enhance their skills and career opportunities. They believe that the use of technology would better prepare them for the global environment. However, they have noted that the lack of proper Internet access and the way teachers engage with technology as a major concern. The results of the survey also highlighted that students are more consumers of online content and are not engaged in creating or sharing content. It also showed that students have limited skills to use technology-enabled platforms. Hence, the skill-deficiency in using technology enabled tools should be addressed before students are invited to these platforms and tools. Developing a course on digital literacy for learners or using COL's Commonwealth Digital Education Leadership Training in Action (C-DELTA course at ASC will help learners become more proficient at using technology for learning.

Chapter 5: Key Findings, Conclusions and Recommendations

5.1 Key Findings

1. Leaders within the college are available to champion the cause. They demonstrate a high level of commitment, support and reporting, which could be of benefit to the development of the TEL environment at ASC.
2. The institutional preparedness score is 87, which is within the range of 'limited preparedness' of a TEL environment. This can be attributed to the following factors:
 - a. lack of relevant policies, strategies and procedures to guide the use of technology for teaching and learning;
 - b. non creation/documentation and sharing of materials, including e-content
 - c. older models of ICT infrastructure (hardware and software) in use
 - d. negative organisational culture; especially, as a factor of the non collaborative attitude of staff
 - e. inadequate training in terms of allotted hours and number of workers who are exposed to training
3. The majority of the teacher hold a Bachelor's degree as their highest qualification
4. Teachers have limited skills in the use technology software and platforms and will require training to enhance their skills to embrace a TEL environment.
5. Online or virtual technologies, downloaded and use of free and open source software for teaching and learning, access to software and e-portfolio is not readily available at ASC.
6. Classes at the ASC are mostly a traditional face to face instruction. This is where the TEL implementation will make a huge difference.
7. Based on the data, teachers at ASC are aware of OER, but they do not share content using open licenses.
8. At Antigua State College OER platforms and sources are rarely used for teaching and learning. Creating an open access repository at ASC will help teachers share their resources.
9. The majority of the teachers are exposed to online teaching and learning platforms but are not trained in integrating these platforms in their teaching and learning.
10. Faculty workload, concern about students' access to technology, lack of training on TEL and a lack of technical support at the college were the major barriers to technology-enabled learning.
11. TEL policy and strategy is a need at the college for raising the proficiency levels of both students and teachers.
12. Most of the learners have access to at least one ICT device with the majority of them owning a Smartphone and/or a laptop.
13. Even though learners indicated that they have access to desktops at the College, most of them also use their own devices (Smartphone, laptops or tablets).

14. The majority of learners access the Internet mostly from home.
15. The most commonly used mediums to access the Internet are Wi-Fi and mobile devices.
16. The content-consumption of the learners at ASC is much higher than the content-generation.
17. Learners do not have access to broadband Internet at ASC.
18. Reliable Internet access is a fundamental component of a TEL environment since it impacts most of the other services.
19. The majority of learners are not sure what is meant by the term MOOC.
20. Learners strongly agree or agree that technology is an important part of their learning to prepare them to meet the challenges of the future technology driven environment.

5.2 Recommendations

1. Develop the relevant policies to upgrade the implementation of TEL at ASC.
2. Increase training opportunities to build capacity and develop a professional learning community in which staff are more trusting and collaborate to develop and share competencies in a TEL environment.
3. Develop a rich environment with new and innovative technologies to meet the needs of the 21st Century technological era.
4. Encourage and provide opportunities for teachers to upgrade their professional qualifications and keep abreast of content in their practice.
5. Develop policies to guide the implementation and integration of ICTs at the Antigua State College and make teachers and learners aware of these policies. Develop policy through a consultative process.
6. Build an OER repository and provide training on the use of OER.
7. Invest in the acquisition of ICT tools and resources and training in the integration of these resources in the teaching and learning practices at the college.
8. Improve Internet and WiFi service and infrastructure to facilitate the implementation of TEL.
9. Improve the bandwidth for Internet access on the campus.
10. There is a need to improve the overall TEL resources, services and spaces provided by Antigua State College.

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