Learners' attitudes, motivations and barriers to TEL in Bangladesh – A case of Ahsanullah University of Science and Technology (AUST)

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Abstract

Technology-enabled learning (TEL) is an increasingly popular method of teaching learning delivery at the on-campus educational institutions all over the world. Bangladesh is not the exception in this practice too. However, there are a number of factors including learners' attitudes, motivations and barriers to TEL need to be considered while implementing TEL. This paper highlighted the case of Ahsanullah University of Science and Technology in terms of learners' preparedness and challenges for TEL implementation.

1. Introduction

Bangladesh is now passing the phase of demographic dividends and it is expected that this window of opportunity will no longer be visible for the country after 2040. If the country cannot engage adequate number of the working-age people into the economic activities, it will fail to exploit the full potentials of exploiting demographic dividends. About 60% of the working-age population are the youths who are growingly being frustrated as they are either not getting any job or expected jobs even after getting university education. Lack of quality education and ICT skills are the prime factors behind the joblessness, according to the employers.

"Digital Bangladesh" is an integral part of the government's *Vision 2021*—which promises a prosperous and equitable middle-income Bangladesh by its golden jubilee of independence. This vision, arguably, runs parallel to the Information Society vision advocated by the World Summit on Information Society (WSIS). It has been outlined the Digital Bangladesh should have four key priorities – (a) developing human resources ready for the 21st century; (b) connecting citizens in ways most meaningful to them; (c) taking services to citizens' doorsteps; and, (d) making the private sector and market more productive and competitive through the use of digital technology. Aligned with the Digital Bangladesh Vision, **ICT in Education Master Plan (2012-2021) has been designed targeting** four basic obstacles – lack of awareness on how ICT can help improve the education sector; lack of technical capacity to develop policies to effectively integrate ICT in the education system; lack of leadership to implement what has been planned and agreed; and lack of effective coordination among the different GoB agencies.

Realizing the national priorities and global trends, Ahsanullah University of Science and Technology (AUST) intends to implement TEL to improve its teaching and learning quality as well as ICT skills through the integration of ICTs

into its courses. However, it is critical to assess the level of attitudes and motivations toward TEL and also identify the barriers to TEL implementation from key stakeholders' perspectives.

The paper highlights the survey findings from AUST on learners' attitudes toward TEL, learners' level of motivation on ICT use in education, and the barriers to TEL implementation from learners' point of view.

2. Objectives

The specific objectives of the paper are to –

- assess the attitudes of the learners of AUST toward TEL
- identify the level of motivation of the learners in accepting TEL
- identify the key barriers to TEL implementation at AUST from learners' point of view

3. Methodology

Both survey data and secondary data used in the paper. The survey data were collected through a structured questionnaire from 528 learners of AUST. Among the respondents 513 (97%) were undergraduate students and only 15 were graduate or postgraduate students. Most of respondents were within the age group 21 to 25 years. Among the respondents, 40% were female and 60% were male. Almost 90.5% of the respondents were from engineering programs and the rest were from business background. Mostly non-parametric analysis of data has been done for the paper using SPSS software. The analysis focuses on gender-based and cross-disciplinary variations in learners' attitudes, motivations and barriers to TEL.

4. Findings and Analysis

4.1. Access to and Use of Information and Communication Technologies

Charts 4.1.1 to 4.1.15 (Appendix 1) show that the learners got access to digital devices and internet mostly at individual level. They access use social media and search engines frequently to access the educational and entertainment resources. Their engagement in digital platforms are satisfactory too. In addition, they got sufficient skills to use and access the digital devices and internet. The findings qualifies their satisfactory visibility in digital space, which in turn identifies their motivation for the technology integration in their learning.

4.2. Motivation toward TEL

Summary of the findings in Section 4.1 indicates that the learners are well aware and equipped with the technologies in their day-to-day activities ranging from entertainment to social and academic. These findings justify the learners' readiness, attitude and motivation for technology use in general. This also identifies that learners at AUST are predisposed to the use of technology and reflects the nature of the millennials in the society in general and their access to technology in particular. The following sections highlights the learners' motivations and attitudes toward TEL specifically.

4.2.1. Students' Perceptions on the Benefits of Technologies

Students' understanding about the value that technologies can add to their learning is the key motivational factor behind their interest in TEL. To visualize that, the students were asked to give their opinion about the benefit of different technologies in their study, skill development and improve their career as well as demand in the job market. Most of the students strongly agreed or agreed that the technologies will help them in study at the university, skill development and preparing themselves for the future job market. Weighted average of rating was around 4.5 (Table 4.2.1) which qualifies students' strong motivation toward TEL.

Table 4.2.1. **Students' perception about technology use for learning**

Rating	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree	Weighted Average

It will help me get better results in my subjects	59.27%	38.42%	1.54%	0.58%	0.19%	4.56
It will help me understand the subject material more deeply	65.64%	31.85%	1.54%	0.77%	0.19%	4.62
It makes completing work in my subjects more convenient	53.33%	41.37%	4.51%	0.78%	0.00%	4.47
It motivates me to explore many topics I may not have seen before	62.48%	32.88%	3.48%	0.77%	0.39%	4.56
It allows me to collaborate with others easily, both on and outside of the campus	49.03%	39.49%	9.53%	1.56%	0.39%	4.35
It will improve my IT/information management skills in general	59.53%	33.66%	6.23%	0.39%	0.19%	4.52
It will improve my career or employment prospects in the long term	61.72%	33.20%	4.10%	0.78%	0.20%	4.55

Source: COL-AUST Baseline Report, 2019

4.2.2. Usefulness of Technologies in Learners' Studies

In response to the question regarding the usefulness of technologies in learners' studies, it is interesting to notice that the learners are aware of the usefulness of technologies in their studies in terms of accessing academic resources, sharing the resources, communicating among the peers, collaborative works, etc (Table 4.2.2). The learners' priorities regarding the use of technologies are widespread. The top priorities are summarized as below:

- Creating and presenting multimedia shows as part of the course requirements (e.g PowerPoint) (4.15)
- Downloading or accessing online radio/video recordings of lectures (missed) (4.16)
- Downloading or accessing online audio/video recordings of lecturers (attended) (4.12)
- Using mobile phone to access web-based university services or information (e.g enrolment, paying fees) (4.01)
- Using instant messaging/chat via Skype, Facebook Messenger, Hangout, etc) to communicate/collaborate with other students in the course (4.05)
- Using social media networking platform especially facebook to communicate/collaborate with other students on the course (4.05)
- Using the Web to share digital flies related to your course (e.g. photos, audio files, movies, digital documents, websites, etc) (4.09)
- Receiving alerts about course information via text message on mobile phone (4.14)
- Using personal dashboard on the university intranet to access all your academic information related to courses, grades, etc. (4.04)

These indicate that the key motivational factors inducing today's learners are not same as the citizens of the previous generations. It gives a signal that the curriculum and teaching and learning activities should be synced with their expectations while TEL is implemented.

Table 4.2.2. Usefulness of technologies in learners' studies

	Not at all useful	Useful to a limited extent	Neutral	Useful	Very useful	Do not know	Weighted average
Design and build Web pages as part of your course?	10.49%	15.15%	10.87%	34.56%	24.27%	4.66%	3.33

Create and present multimedia shows as part of your course requirements (e.g PowerPoint)?	2.52%	6.40%	5.62%	33.14%	50.00%	2.33%	4.15
Create and present audio/video as part of your course requirements?	5.05%	7.18%	13.59%	36.12%	34.95%	3.11%	3.79
Download or access online radio/video recordings of lectures you could not attend?	4.49%	3.71%	8.01%	22.66%	57.81%	3.32%	4.16
Download or access online audio/video recordings to revise content of lecturers you have already been to?	3.71%	4.88%	7.23%	27.15%	53.71%	3.32%	4.12
Download or access online audio/video recordings of supplementary content materials?	3.50%	4.66%	10.29%	33.40%	44.27%	3.88%	3.99
Use the Web to access university-based services (e.g enrolment, paying fees)?	4.90%	4.12%	9.02%	32.16%	45.49%	4.31%	3.96
Use your mobile phone to access web-based university services or information (e.g enrolment, paying fees)?	4.87%	4.87%	8.38%	33.33%	45.61%	2.92%	4.01
Use instant messaging/chat (e.g Skype, Messenger, Hangout, etc) on the Web to communicate/collaborate with other students in the course?	4.86%	6.03%	8.95%	31.13%	47.28%	1.75%	4.05
Use a social media networking platform (e.g Facebook) on the Web to communicate/collaborate with other students on the course?	4.09%	5.64%	10.51%	30.54%	47.28%	1.95%	4.05
Use microblogging (such as Twitter) to share information about class-related activities?	10.55%	9.57%	21.48%	27.54%	19.92%	10.94 %	3.04
Keep your own blog as part of your course requirements?	10.52%	7.74%	23.41%	28.77%	18.25%	11.31 %	3.03
Use instant messaging/chat (e.g Skype, Messenger, Hangout, etc) on the Web to communicate with teachers and administrative staff from the course	4.90%	5.69%	10.20%	32.94%	43.73%	2.55%	3.97
Contribute to another blog as part of your course requirements?	9.39%	5.09%	22.70%	30.53%	18.20%	14.09 %	3.01
Use the Web to share digital flies related to your course (e.g. photos, audio files, movies, digital documents, websites, etc)?	3.38%	4.97%	8.15%	30.22%	50.10%	3.18%	4.09
Use Web-conferencing or video chat to communicate/collaborate with other students in the course?	6.11%	4.93%	12.43%	34.52%	38.66%	3.35%	3.85
Receive alerts about course information (e.g. timetable changes, the release of new learning resources, changes in assessment) via RSS feeds on the Web?	4.54%	4.73%	9.07%	25.84%	48.72%	7.10%	3.88
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?	4.90%	3.14%	6.86%	27.25%	54.71%	3.14%	4.14

Contribute with other students to the development of a wiki as part of your course requirement?	5.34%	5.14%	15.61%	35.38%	28.85%	9.68%	3.48
Receive grades/marks from your lecturer via text message on your mobile phone?	9.07%	4.54%	13.41%	29.39%	40.24%	3.35%	3.77
Receive pre-class discussion questions from your lecturer via text message on your mobile phone?	6.76%	6.36%	8.75%	28.83%	45.53%	3.78%	3.89
Use a personal dashboard on the university intranet to access all your academic information related to courses, grades, etc.?	3.11%	3.69%	9.90%	23.30%	54.17%	5.83%	4.04
Use an ePortfolio system to record your achievements for future use beyond the course of your studies?	4.71%	3.14%	10.00%	26.67%	46.47%	9.02%	3.8

Source: COL-AUST Baseline Report, 2019

4.2.3. Learners' Perception about Technology Use in Education

The learners are very much positive toward the use of technologies in their education. They are aware of the benefits of the technology use in the class and outside the classroom. About 60% of the respondents believe that if lecturers are available online, they will not skip classes. However over 70% also thinks that technology impedes their deep thinking in a subject. They are concerned about the privacy and security issues relating to technologies. Majority of the learners (92%) like to see the use of technologies for better connectedness with the peer learners as well as the teachers, better engagement in the course works (91%) and more access to the course related information. Table 4.2.3 shows the details of the learners' perceptions about technology use in education.

Table 4.2.3. Learners' perception about technology use in education

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree	Do not know
I get more actively involved in courses that use technology.	46.14%	45.75%	4.44%	1.35%	1.93%	0.39%
I am more likely to skip classes when materials from course lectures are available online.	7.21%	13.45%	17.74%	46.20%	13.65%	1.75%
When I enter college, I was adequately prepared to use the technology needed in my courses.	26.18%	47.44%	14.17%	7.09%	0.98%	4.13%
Technology makes me feel connected to other students.	46.88%	44.92%	5.86%	1.37%	0.59%	0.39%
Technology makes me feel connected to teachers.	41.70%	44.86%	9.68%	1.58%	1.78%	0.40%
Technology interferes with my ability to concentrate and think deeply about subjects I care about.	28.49%	41.85%	13.56%	10.02%	4.32%	1.77%
I am concerned that technology advances may increasingly invade my privacy.	23.38%	42.44%	20.04%	9.63%	2.36%	2.16%
I am concerned about cyber security (password protection and hacking).	40.00%	43.50%	8.35%	5.24%	0.97%	1.94%
In-class use of mobile devices is distracting to my teacher.	38.55%	41.88%	10.57%	5.28%	2.15%	1.57%
Use of tablets/laptops in-class improves my engagement with the content and class	23.09%	37.57%	20.94%	13.50%	3.52%	1.37%
Multitasking with my technology devices sometimes prevents me from concentrating on or doing the work that is most important	25.20%	46.68%	16.21%	7.03%	1.95%	2.93%
When it comes to social media (e.g. Facebook, Twitter, Linkedin), I like to keep my academic life and social life separate	39.38%	38.60%	11.50%	8.97%	0.97%	0.58%

I wish my teachers in the university would use and integrate more technology in their teaching.	49.03%	40.27%	8.17%	0.58%	0.97%	0.97%
Technology makes me feel connected to what's going on at the college/university.	49.03%	43.00%	5.25%	1.17%	0.78%	0.78%
In-class use of mobile devices is distracting to me.	30.35%	39.11%	16.54%	8.56%	4.86%	0.58%

Source: COL-AUST Baseline Report, 2019

4.3. Learners' Opinions Regarding TEL Environment at AUST – Barriers/gaps and Expectations

Learners were asked an open question to give their opinion on the existing gaps that should be improved for better technology-enabled learning environment at AUST. When students were asked to give their comments on the statement "There is a need to improve the technology-enabled learning environment in your university," almost 99% of the learners supported the statement. They strongly felt that TEL implementation at the university will enhance their learning; however, there are some gaps at the university that need be improved as soon as possible. The students' comments in Table 4.3 indicates the existing barriers/gaps at the university and the expected areas of improvement.

Table 4.3. Learners' Opinions Regarding TEL Environment at AUST

Areas of improvement	**Barriers/Gaps**	**Students' expectations**
Wi-Fi coverage	• Wi-Fi is not available campus-wide • all the Laboratories and classrooms are not equipped with free Wi-Fi	• Wi-Fi coverage should be available campus-wide • Laboratories and classrooms should be equipped with free Wi-Fi
Access to digital content	• Contents are not usually available online • Softwares are not available to learners free of cost	• Video, audio and other digital content should be available online • Required software and other relevant applications should be available to learners free of cost
Adaptation of LMS Online courses	• No LMS available	• Content, assignments and quizzes should be accessible online through a user-friendly LMS
	• The university doesn't offer online courses • There is no policy to recognize online courses as of equivalent value to face-to- face courses	• The university should offer some online courses so that learners can improve their lifelong skills • Online courses should be recognised as of equivalent value to face-to- face courses
Smart boards	• No smartboards in the classrooms	• Classrooms should be equipped with smart boards
On-campus support for TEL	• No 24/7 troubleshooting service to resolve technological problems	• There should be a dedicated support system for troubleshooting technological problems
Live virtual classes	• Class lectures are not recorded or livestreamed	• Classes should be live-streamed and accessible from anywhere
IT training	• No IT training for learners	• There should be continuous IT training for learners

5. Discussions

- Although AUST uses face to face delivery method in their course deliveries, the learners got positive attitude towards the use of TEL. They are highly motivated to integrate TEL into their education and training.

- Almost all (99.0%) of the students have their own Smartphone, 84.6% have Laptop computer, 76.4% have Desktop computer and 31.8% have either tablet or iPad. They use mostly Smartphone. Almost all the students (98.1%) have internet connection at their own home. One-third of the learners (35.9%) use internet at University campus, 21.6% use internet at University labs and 7.8% use it at Cybercafés. It was found that around half of the learners spend 3-5 hours daily on internet, 24.2% spend 1-2 hours.
- Most of the students can use word processor, power point, email and search engine. Almost all the students have Facebook account. Accounts in Google+, Photo sharing, Twitter, Social bookmarking sites, Research Sharing site and Research Sharing site were 66.7, 65.3, 32.2, 30.7, 24.8 and 23.1 percent respectively. On an average, 41.7% of the students spend 1-2 hours on social media, 35.6% spend 3-5 hours, 11.2% spend above 5 hours and 10.4% spend less than 1 hour.
- Around half of the students are member of different IT-based forum like mailing list or discussion forum. Majority of them use the forum not so frequently. Students are not used to MOOCs. Most of the students strongly agree or agree that the technologies they are using in the university will help them in study in the university, skill development and preparing themselves for the future job market.
- Learners at AUST are aware of the usefulness of technologies in their studies in terms of accessing academic resources, sharing the resources, communicating among the peers, collaborative works, etc. They prefer to have access to the educational resources and course related information online. They also like to use social media to be connected with other students and teachers. They prefer to search and download the videos, texts and audios from internet. However, they are not well aware of copyright restrictions.
- Learners of AUST believe that integrating technologies enhances the level of engagement into the courses. Technology also helps learners to be connected with peers and teachers. Learners are aware of cyber security. They like to separate the social life from the academic life when they are engaged in social media.

6. Conclusion

Based on the findings of the baseline study, the university has some facilities which may be sufficient for the undergraduate. However, some more technology interventions can create a significant change in the teaching and learning practices at AUST. They can enhance the quality of their courses through better content creation, sharing and engagement of the learners.

7. Recommendations

The following recommendations can be made to improve TEL environment at AUST

- AUST should have a comprehensive action plan and aligned guidelines for TEL implementation in its teaching and learning process.
- There is a need to ensure wider access to Wi-Fi network at the university campus. Bandwidth should be increased sufficiently so that the learners and teachers get easy and uninterrupted access to the educational resources, course related information and various learning forums and social media.
- The university may initiate some regular programs on digital literacy for the learners. In addition, C-DELTA can be a good platform for the students to test and enhance their digital literacy online.
- A well-structured and user friendly LMS (installed or cloud) should be initiated and used for all the courses of AUST. On the LMS, the teachers share the learning contents, students interact with peers as well as the teachers, and grades and feedbacks on the assignments are shown.

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Appendix 1:

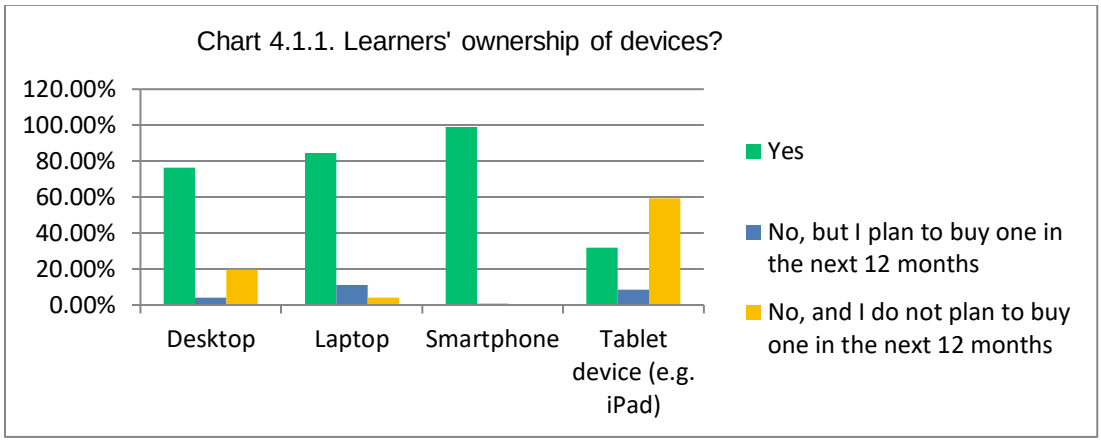


Chart 4.1.1. Learners' ownership of devices?
120.00%
100.00%
80.00%
60.00%
40.00%
20.00%
0.00%
Desktop
Laptop
Smartphone
Tablet device (e.g. iPad)
Yes
No, but I plan to buy one in the next 12 months
No, and I do not plan to buy one in the next 12 months

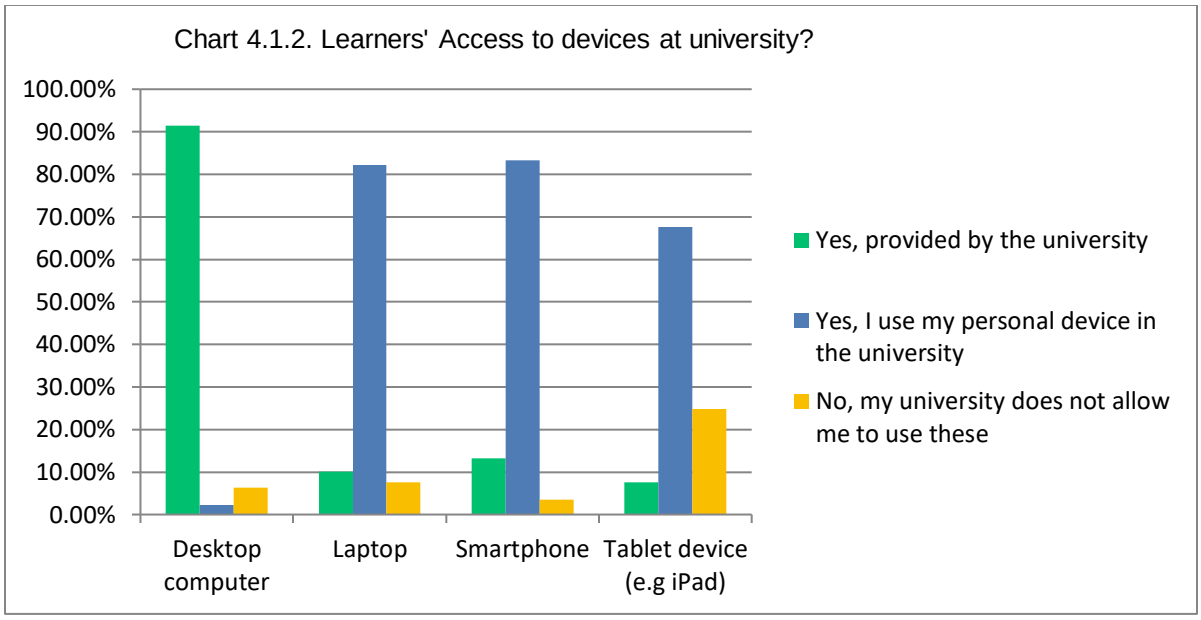


Chart 4.1.2. Learners' Access to devices at university?
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Desktop computer
Laptop
Smartphone
Tablet device (e.g iPad)
Yes, provided by the university
Yes, I use my personal device in the university
No, my university does not allow me to use these

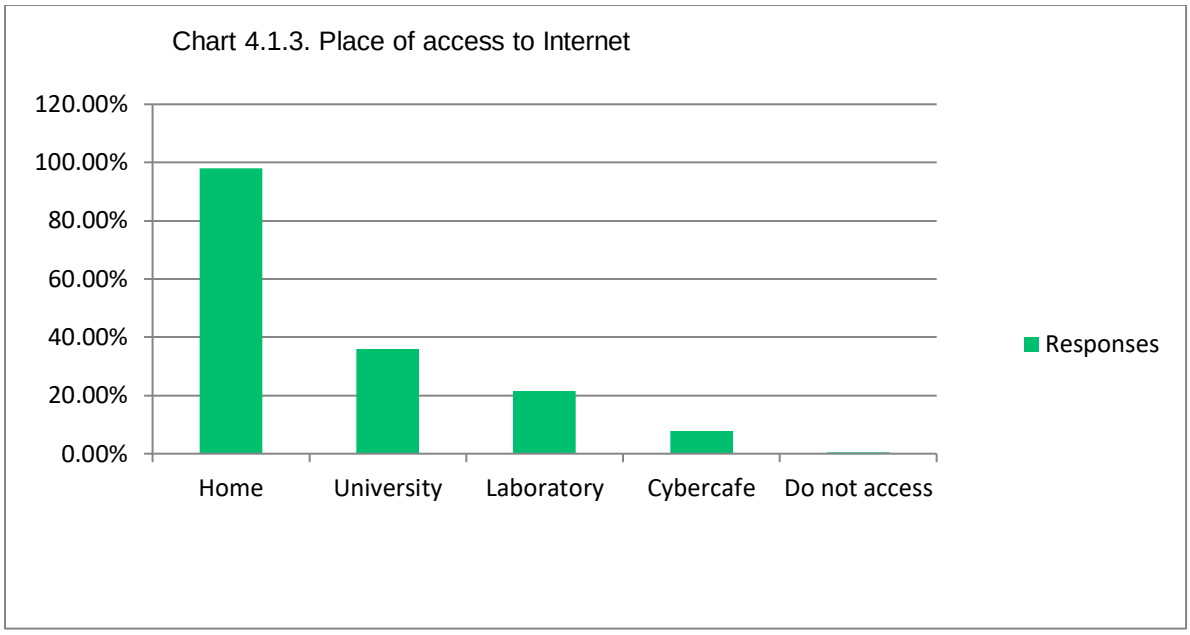


Chart 4.1.3. Place of access to Internet
120.00%
100.00%
80.00%
60.00%
40.00%
20.00%
0.00%
Home
University
Laboratory
Cybercafe
Do not access
Responses

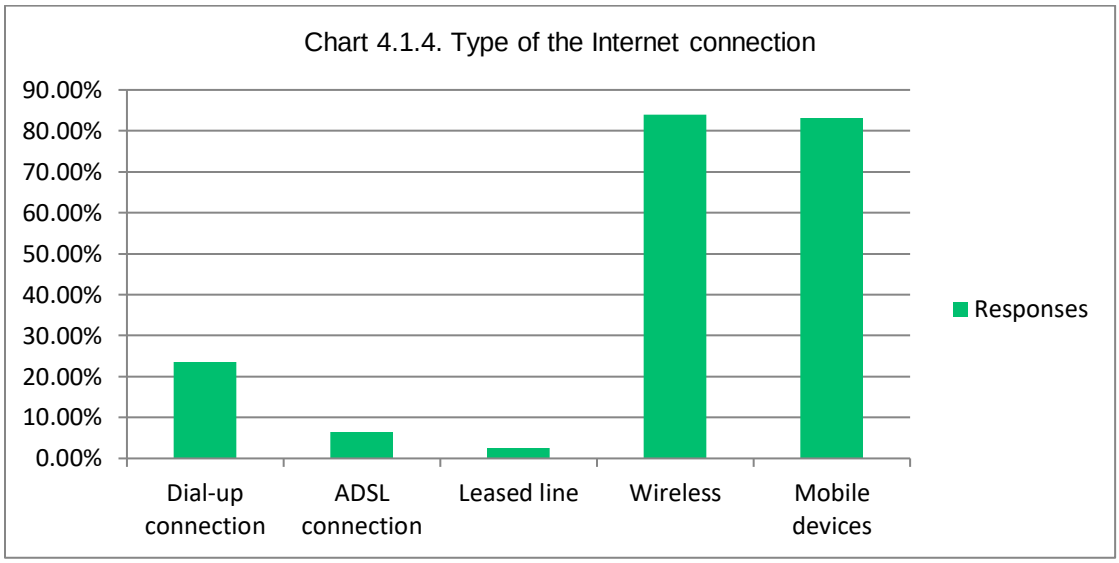
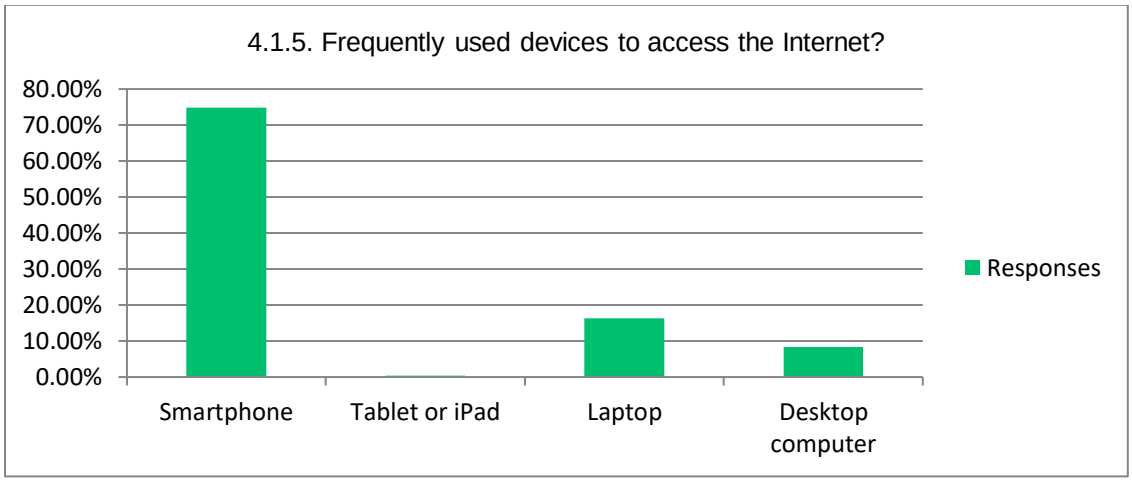
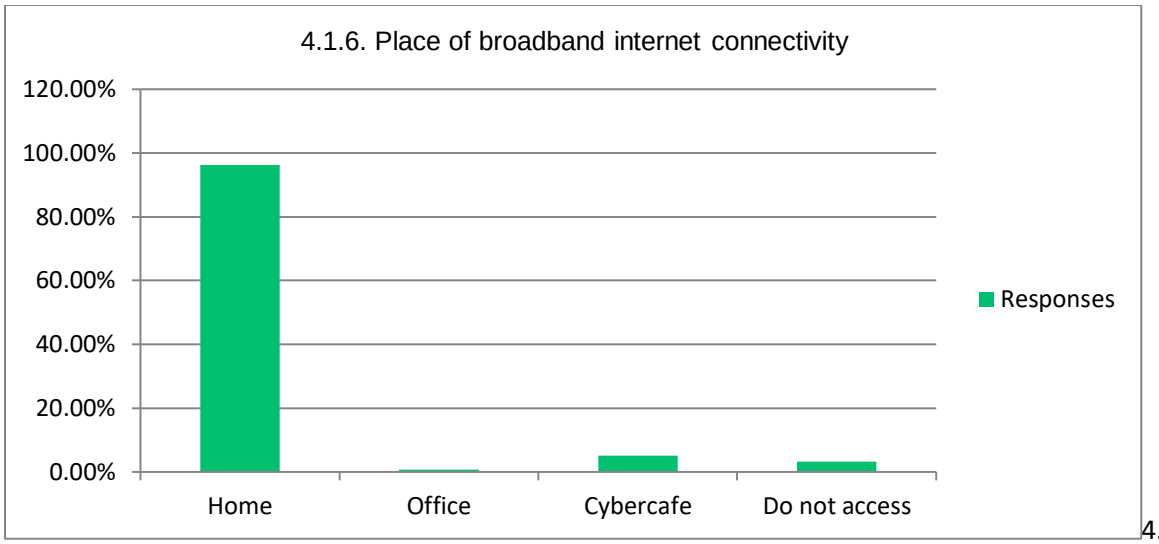
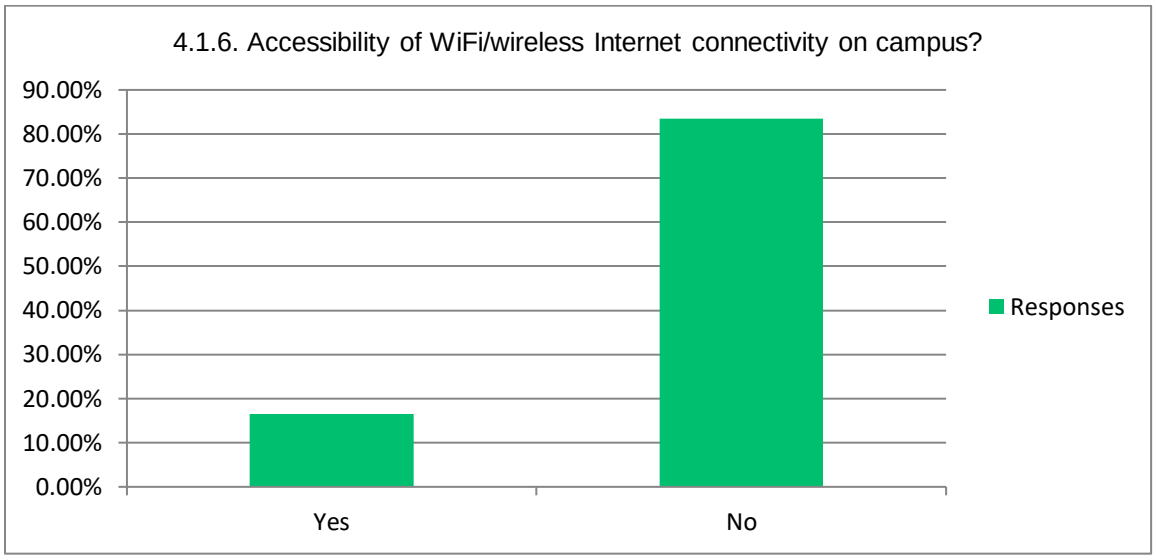


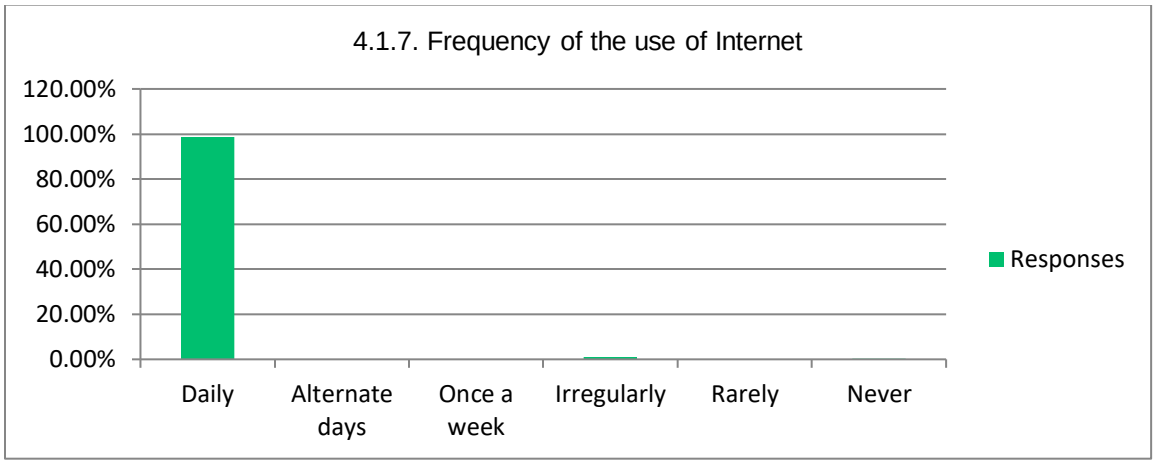
Chart 4.1.4. Type of the Internet connection
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Dial-up connection
ADSL connection
Leased line
Wireless
Mobile devices
Responses

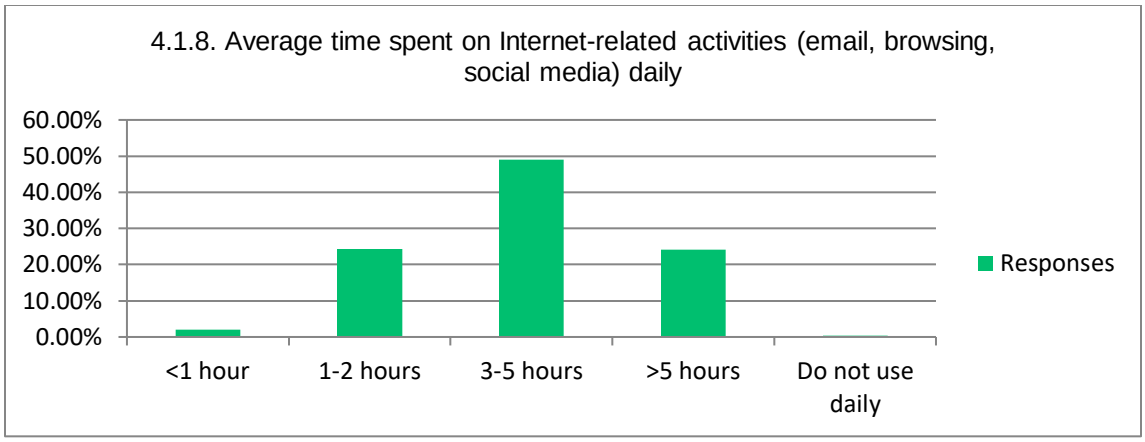

4.1.5. Frequently used devices to access the Internet?
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Smartphone
Tablet or iPad
Laptop
Desktop computer
Responses

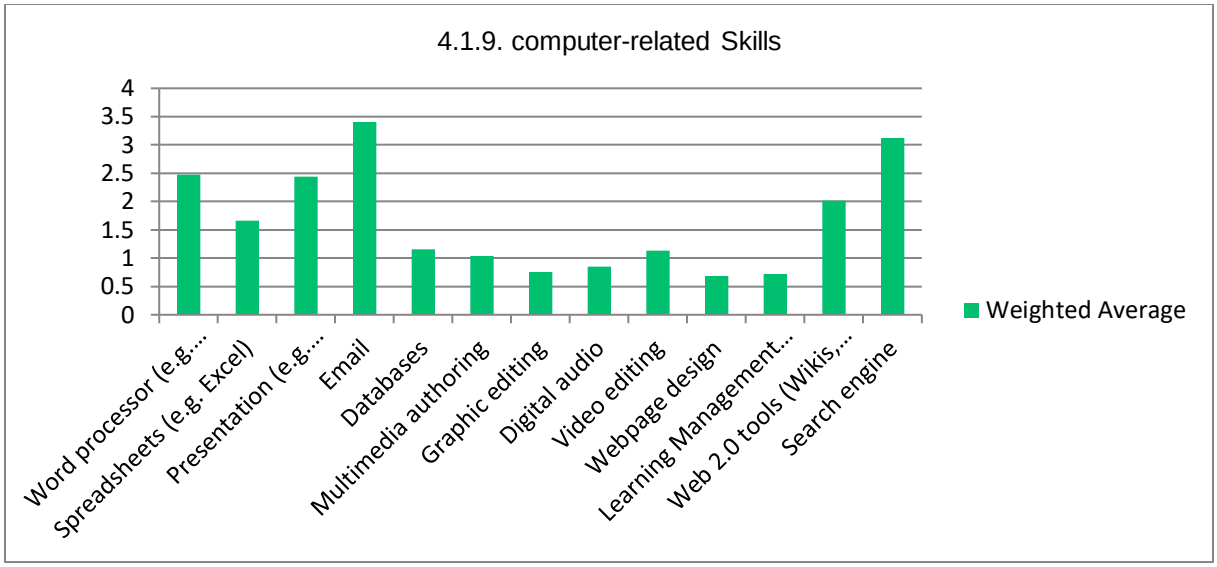

4.1.6. Place of broadband internet connectivity
120.00%
100.00%
80.00%
60.00%
40.00%
20.00%
0.00%
Home
Office
Cybercafe
Do not access
Responses

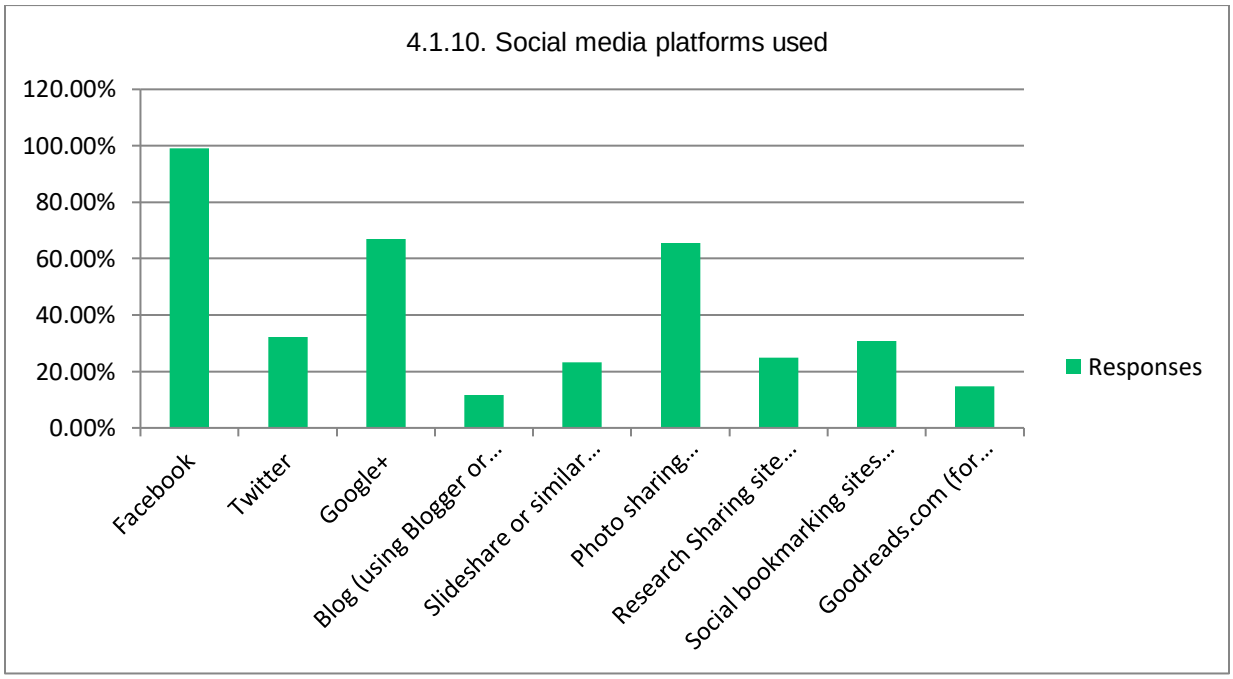
4.1.

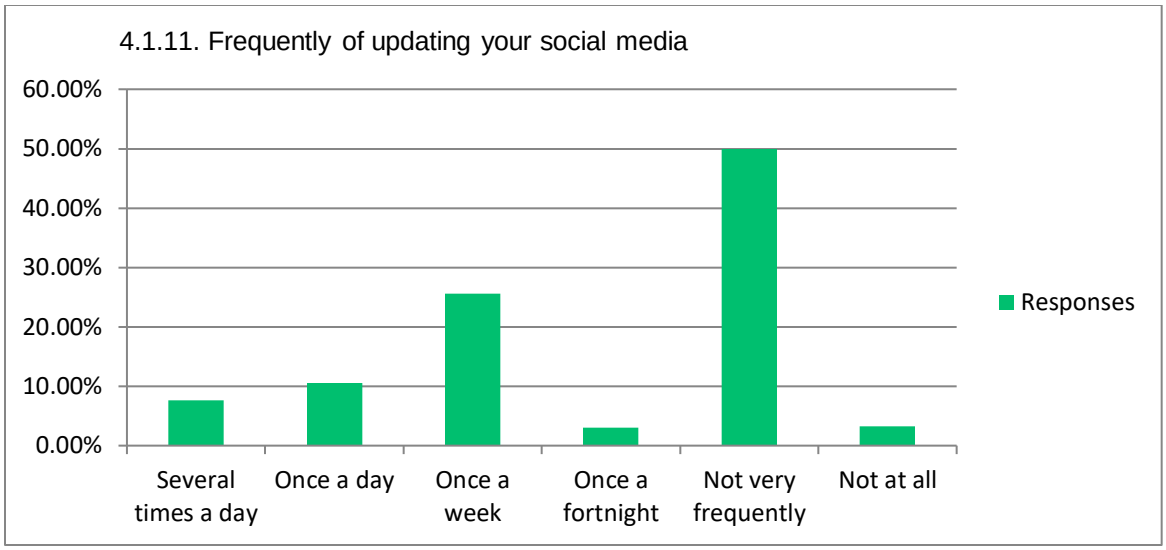

4.1.6. Accessibility of WiFi/wireless Internet connectivity on campus?
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Yes
No
Responses

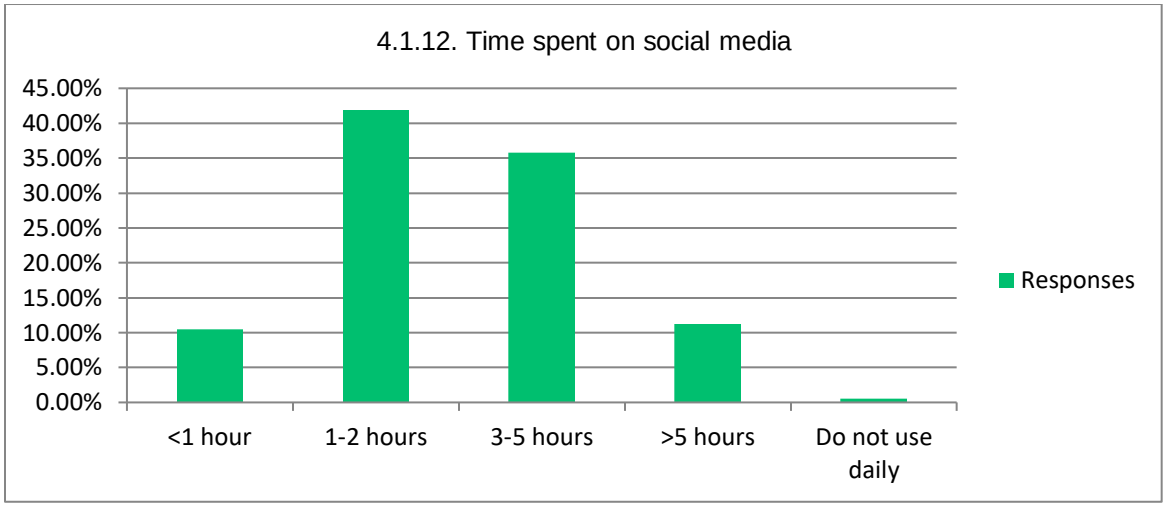

4.1.7. Frequency of the use of Internet
120.00%
100.00%
80.00%
60.00%
40.00%
20.00%
0.00%
Daily
Alternate days
Once a week
Irregularly
Rarely
Never
Responses

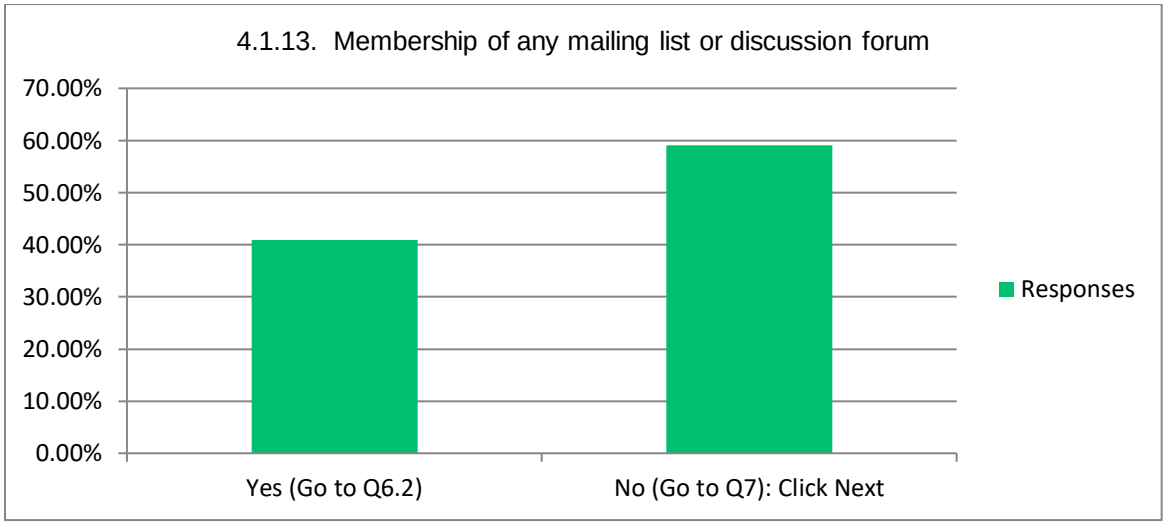

4.1.8. Average time spent on Internet-related activities (email, browsing, social media) daily
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
<1 hour
1-2 hours
3-5 hours
>5 hours
Do not use daily
Responses

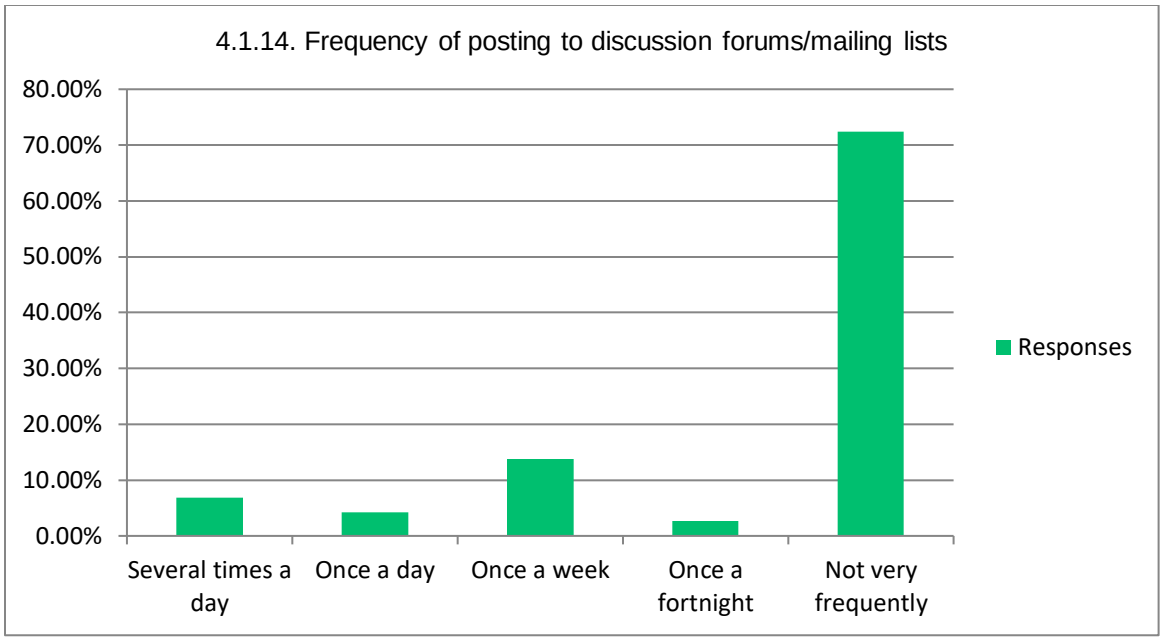

4.1.9. computer-related Skills
4
3.5
3
2.5
2
1.5
1
0.5
0
Word processor (e.g....
Spreadsheets (e.g. Excel)
Presentation (e.g....
Email
Databases
Multimedia authoring
Graphic editing
Digital audio
Video editing
Webpage design
Learning Management...
Web 2.0 tools (Wikis,...
Search engine
Weighted Average

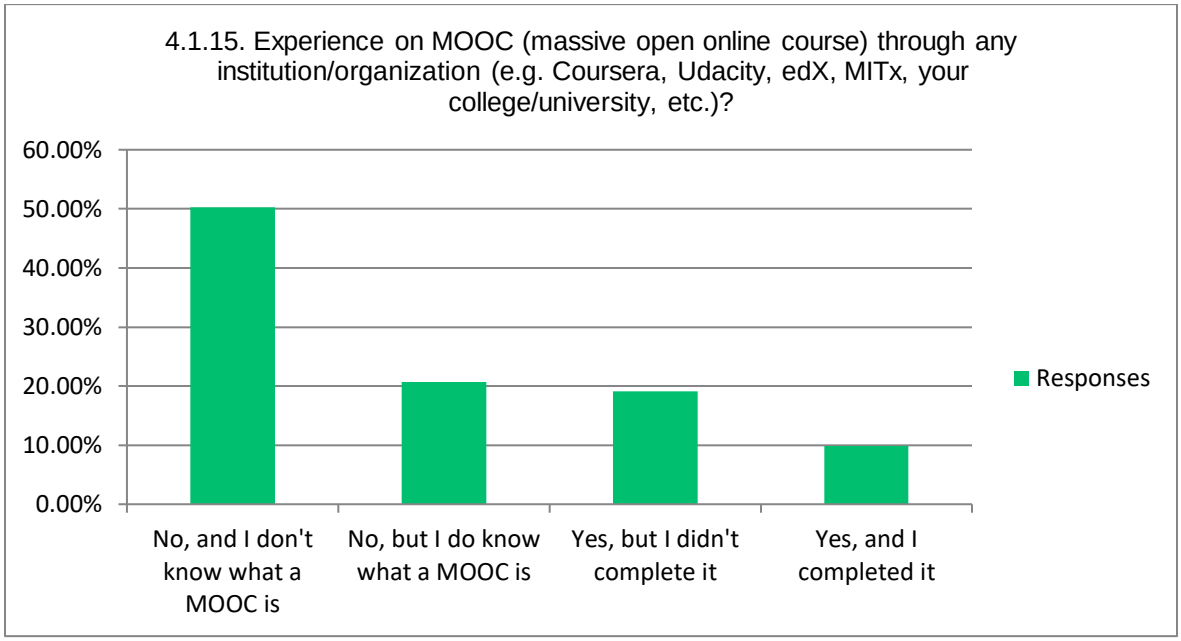

4.1.10. Social media platforms used
120.00%
100.00%
80.00%
60.00%
40.00%
20.00%
0.00%
Facebook
Twitter
Google+
Blog (using Blogger or...
Slideshare or similar...
Photo sharing...
Research Sharing site...
Social bookmarking sites...
Goodreads.com (for...
Responses


4.1.11. Frequently of updating your social media
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Several times a day
Once a day
Once a week
Once a fortnight
Not very frequently
Not at all
Responses


4.1.12. Time spent on social media
45.00%
40.00%
35.00%
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
<1 hour
1-2 hours
3-5 hours
>5 hours
Do not use daily
Responses


4.1.13. Membership of any mailing list or discussion forum
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Yes (Go to Q6.2)
No (Go to Q7): Click Next
Responses


4.1.14. Frequency of posting to discussion forums/mailing lists
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Several times a day
Once a day
Once a week
Once a fortnight
Not very frequently
Responses


4.1.15. Experience on MOOC (massive open online course) through any institution/organization (e.g. Coursera, Udacity, edX, MITx, your college/university, etc.)?
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
No, and I don't know what a MOOC is
No, but I do know what a MOOC is
Yes, but I didn't complete it
Yes, and I completed it
Responses