STUDENTS' ACCESS TO AND USE OF LEARNING MATERIALS

Survey Report 2020

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higher education
& training

Department:
Higher education and Training
REPUBLIC OF SOUTH AFRICA

Foreword

Revisions of the National Student Financial Aid Scheme (NSFAS) policy brought with it questions about whether students are using allowances appropriately to access learning materials. In parallel, and aligned with international trends, the nature of textbooks and broader learning materials has evolved, with many educational materials taking electronic forms. As a result, a steady decline in traditional textbook use and sales have been noted in different contexts.

In pursuit of an evidence-based approach to identify to what extent students are accessing and engaging with required learning materials, the Department of Higher Education and Training (DHET) approached the South African Survey of Student Engagement (SASSE) team, of the Centre for Teaching and Learning, at the University of the Free State (UFS) to conduct a research project to explore this relationship between students and learning materials. During the initial planning conversations, the sector initiated emergency responses to COVID-19, which provided an additional lens through which students' engagement with learning materials and broader teaching and learning could be explored.

The UFS SASSE team, in consultation and collaboration with the broader sector, developed and administered the Students' Access to and Use of Learning Materials (SAULM) survey. The DHET sent out an invitation to all 26 public institutions, of which 24 responded and took part. It is with great appreciation to these institutions that this report captures the experiences of almost 50,000 students. These experiences inform how sectoral and institutional policy-making mechanisms can respond to the shifting nature of teaching and learning in a more digitally demanding world.

The interest and efforts of sectoral stakeholders, including the 24 institutions, the Council on Higher Education (CHE) and Universities South Africa (USAf), reflect a commitment to collaborate and a willingness to contribute to the advancement of the sector – for which the DHET is grateful.

The DHET also records its appreciation to the UFS SASSE team for their excellent strategic work on the project, for executing a well-managed project and for an interesting and engaging report.

We hope that through publishing this report, institutions and other role players would engage in data-driven conversations that would contribute to the advancement of students' and the sector's success.

TABLE OF
CONTENTS

LIST OF
FIGURES

LIST OF
ACRONYMS

5

CESM	Classification of Educational Subject Matter
CHE	Council on Higher Education
CPUT	Cape Peninsula University of Technology
CUT	Central University of Technology
DHET	Department of Higher Education and Training
DUT	Durban University of Technology
LMS	Learning Management System
MUT	Mangosuthu University of Technology
NMU	Nelson Mandela University
NSFAS	National Student Financial Aid Scheme
NWU	North-West University
POPIA	Protection of Personal Information Act of 2013
RU	Rhodes University
SASSE	South African Surveys of Student Engagement
SAULM	Students' Access to and Use of Learning Materials Survey
SMU	SefakoMakgatho University
SPU	Sol Plaatje University
TUT	Tshwane University of Technology
UCT	University of Cape Town
UFH	University of Fort Hare
UFS	University of the Free State
UJ	University of Johannesburg
UKZN	University of KwaZulu-Natal
UL	University of Limpopo
UMP	University of Mpumalanga
UNISA	University of South Africa
UNIVEN	University of Venda
UP	University of Pretoria
US	University of Stellenbosch
USAf	Universities South Africa
UWC	University of the Western Cape
VUT	Vaal University of Technology
WSU	Walter Sisulu University

Executive Summary

Internationally, engagement with learning materials in higher education contexts is changing, and South Africa is no exception. This report shares findings of a national survey requested by the Department of Higher Education and Training (DHET) to explore how students are accessing and using learning materials. The study was conceptualised and administered at an opportune time, five months into the national lockdown brought on as a response to the COVID-19 pandemic. This meant that the survey could explore students' experiences prior to, and during lockdown. Since the majority of institutions managed to implement some form of remote learning, capturing the experiences of students during this time can contribute meaningfully to the sector's conceptualisation of teaching and learning beyond the emergency remote learning response necessitated in 2020.

The sample and analysis

The survey allowed the collection of quantitative and qualitative data. A total of 48,981 respondents generated a robust quantitative data set as well as a rich qualitative data set of 3,672 pages of text. Twenty-four out of the 26 public universities participated, which enables a cross-sectoral perspective of traditional universities, universities of technology, as well as comprehensive universities. The main report focuses on students' experiences as well as particularly paying attention to NSFAS-funded students' experiences. Analyses of the experiences of distance students, postgraduate research students, and differentiating between institutional types are provided in the appendices as supplementary information to the main focus of the report. As is the case with all online surveys during this time, there is a likelihood that many of those who did not participate in the survey could not participate because of a lack of access to devices, network, and data (beyond those choosing not to participate). Triangulation of qualitative and quantitative data was used to identify consistent themes that could support generalisability of the findings to inform policy and practice. Here are some of the key findings relating to the survey:

Learning materials

- 77% of student respondents had modules move to remote learning (18% are current distance students, with no modules moving to remote learning, and 5% indicated that they did not have any modules move to remote learning).
- 87% of students' first semester modules had prescribed textbooks, however, 27% of students did not buy any prescribed books in the first semester of 2020.
- Of those who did not buy any books, 68% accessed prescribed textbooks digitally.
- Even though the majority still bought textbooks, they did not buy all of their prescribed textbooks. Half (49%) of those who bought textbooks only spent up to R1,500 on these books during the first semester of 2020.
- NSFAS students buy more prescribed textbooks than students not funded by NSFAS, however, more NSFAS students rely on second-hand books.
- Of all respondents who bought textbooks in the first semester, 68% bought them new, 64% bought second-hand books, and 8% downloaded soft-copies.
- During remote learning, students were exposed to a wider range of learning materials and accessed materials through more platforms.

Access to devices, data and connectivity

In order for students to effectively engage with learning materials and educational technology, they need to have access to devices and data. Students were asked how many devices they own that they can use to engage with their studies:

- 96% of respondents own a device (the majority, 90% own 1-2 devices). Of those who own devices, 89% state that they own a smartphone, while around 60% own laptops.
- Almost 20% fewer NSFAS students own laptops than non-NSFAS students, and 90% indicate that the device they own is a smartphone.
- When asked how students obtained the devices they own, 69% indicated that they either bought them themselves or they were bought for them by a family member. A third indicated that they bought them with their NSFAS allowance and 8% stated that they obtained their devices through their institutions.
- The majority of the 4% of students who do not own any devices indicated that they would borrow devices from family members (56%) or friends (38%).
- Half (50%) of all respondents find that using a smartphone for academic purposes is somewhat to very difficult.
- NSFAS students did find it slightly more difficult to use desktops, laptops and smartphones compared to other students.
- Around two-thirds of respondents purchased data bundles from service providers, while almost half (46%) accessed data through their institutions. Almost a quarter of students resorted to using hotspots from other devices, while 16% have Wi-Fi or fibre at home.
- NSFAS students mainly accessed data by purchasing data bundles (65%) and almost half (48%) used institutional data. Only a quarter of the sample did not have to make a plan to get data.
- Students enrolled in Universities of Technology had fewer modules move to remote learning, and had more struggles with data, network, and devices.

Engaging with educational technology

In order to effectively engage with educational technology, students need conducive environments to study in, and the necessary skills to engage with technology. Some findings related to students' engagement with educational technology include:

- 20% of students are not able to charge their devices as needed, more than half (54%) do not have a quiet place to study, and only half (50%) indicate that they have appropriate network connection.
- Fewer NSFAS students have adequate access to network connectivity, electricity and a quiet place to study.
- The majority of students (92%) submitted assignments, 78% downloaded learning materials, 76% wrote tests online, 73% used email as a communication channel, 71% accessed learning materials online and 65% took quizzes.
- While 70% of respondents engaged with classmates through online chats, only 45% formally engaged in online group work.
- Comparative analysis shows that NSFAS students in general engaged less with online activities than non-NSFAS funded students during remote learning.

Challenges of technology and learning

The thematic qualitative analysis identified 16 challenges that can be summarised as follows:

- The biggest obstacles to students' engagement with remote learning are network connectivity, data, and not having appropriate devices for studying.
- Some other challenges students faced during this time include problems with electricity, a lack of study space, not having adequate knowledge and skills to optimally make use of devices and new study platforms, and feeling isolated or disconnected from lecturers and peers.
- Importantly, while the challenges experienced by respondents were intensified for NSFAS students, they were not limited to NSFAS students.

Benefits of technology and learning

The thematic qualitative analysis identified 12 benefits that include:

- An appreciation for the convenience of asynchronous learning, saving time and money on transportation costs, developing a range of skills and knowledge about devices and educational technology, becoming more self-directed and independent learners, reporting increased and easier communication with lecturers and peers, and recognising the efforts lecturers and institutions put in to help save the academic year.

Implications for policy and practice

The COVID-19 pandemic pushed the sector to rapidly adapt to circumstances that very few in the sector have experienced before. Students' responses testify to the fact that South African institutions are able to adapt and engage with technologies to create a new way of offering teaching and learning. That does not mean that technology should replace teaching and learning, but it does imply that the sector is ready to embrace technology as an education enhancer. In order for a more technologically enabled teaching and learning environment to flourish, the findings of the Students' Access to and Use of Learning Materials (SAULM) survey could contribute to policy and practice by making a case for:

- Ensuring that all staff and students have access to basic learning infrastructure, which includes appropriate devices, data and connectivity, to address the digital divide.
- Prioritising digital skills development on a national and institutional level that will empower staff and students to succeed.
- Developing or investing in flexible content delivery platform(s) that would allow more affordable use of textbooks, institutionally developed materials, as well as Open Education Resources (OERs) across a range of devices.
- Enhancing financial aid needs by reconsidering and providing more guidance on NSFAS allowance expenditure and supporting innovative funding solutions for the "missing middle" students.
- Investing in developing technologically enhanced pedagogical practices that are flexible and adaptable to the disruptions (socio-economic, political and technological) that characterise the 21st century workplace and world.
- Embarking on collaborative initiatives to consider the implication of a "new normal" for subsidy, quality assurance and quality enhancement.

In essence, a "new normal" embraces technology. If done well, the flexibility provided by a more blended/open learning environment creates an opportunity for students to engage optimally with their studies, while enabling universal access using different technologies. This is important, particularly to bridge digital divides. The survey further points out that NSFAS funding makes a critical contribution to enable a large number of students to access and participate in higher education.

Implications for future research

The findings of this report identify several key questions that need further research attention:

- How has teaching and learning changed due to the pandemic and what are the implications?
- What would an optimal and inclusive blended learning and teaching environment look like in a 'new normal' era?
- What national and institutional policy changes are needed to guide the development and sustainability of such blended environments?
- In what ways could lecturers be supported to drive the inclusion of technology as educational enhancement?

To take these, and other critical questions emerging from this and other data sets further, we propose that the Student Success Collaborative Forum, established under the auspices of Universities South Africa (USAf) in collaboration with the DHET, plays a leading role in stimulating research and developing strategies that can inform the development of a new era of digitally enhanced educational experiences.

Introduction

The COVID-19 pandemic has necessitated emergency changes in teaching and learning, but has also created a rare opportunity to think differently about the assumptions and processes that have become the norm. The SAULM survey, initiated by the DHET, provided an opportunity to gather national data that can help institutions and the broader sector to reflect on how things have changed and what the implications could be for a "new normal." At its core, the SAULM survey was developed to explore how students are engaging with learning materials. In recent years, the nature of textbooks and broader learning materials has evolved, with many educational materials taking electronic forms. As a result, a steady decline in traditional textbook use and sales has been noted.[1] In South Africa, a similar tendency is seen in that the sale of textbooks rapidly declined in 2020. This happened in parallel with the implementation of a revised National Student Financial Aid Scheme (NSFAS) funding distribution policy. Considering that a substantial number of higher education students (approximately 480,000 in 2020) rely on NSFAS funds, it seems plausible that these events are related.

The necessitated move to remote learning for the majority of the sector allowed a differentiated view between how students engaged with learning materials before lockdown as well as during lockdown. Since technology is central to facilitating access to learning materials during this time, the survey included sections on students' access to devices, data, and whether they have the necessary digital skills to navigate educational technology and devices.

Access to, and use of technology, brings to light another key focus of the survey – the digital divide. While the possibilities of technology to enhance learning and education keep growing, the higher education sector needs to make significant efforts not to exclude opportunities for students because of an inability to access or optimally make use of technology and devices.

Taken together, the purpose of this research is to identify how students are accessing and using different forms of learning materials, and to explore how students' experiences during the current context might inform how we think about policy and practice in a more digitally advanced teaching and learning space.

Methodological approach

The DHET requested the South African Survey of Student Engagement (SASSE) team at the University of the Free State (UFS) to develop a survey, targeted at the national higher education student population, to address these information gaps. The SASSE team has administered surveys on a national level for over a decade and has developed a network of institutions interested in advancing an evidence-based understanding of their students' engagement.
The SAULM survey was developed with the following research questions in mind: To what extent are students able to access and use different forms of learning materials? And in what ways, if any, did students' access and use of learning materials differ before and after the national lockdown?

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[1] Some examples include reports from the Florida Virtual Campus, 2019 (https://dlss.flvc.org/documents/210036/1314923/2018+Student+Textbook+and+Course+-Materials+Survey+Report+--+FINAL+VERSION+--+20190308.pdf/07478d85-89c2-3742-209a-9cc5df8cd7ea); Student Watch On Campus research (https://www.on-campusresearch.org/student-watch); and examples from New Zealand (https://files.eric.ed.gov/fulltext/EJ1165496.pdf) and Australia (https://www.tandfonline.com/doi/full/10.1080/2331186X.2015.1015812)

A convergent mixed-method design, where quantitative and qualitative data are collected simultaneously, guided the study's methodology (Creswell & Creswell, 2018). The survey was shared with and reviewed by representatives from DHET, the Council on Higher Education (CHE), USAf, and representatives from 10 institutions that form part of the SASSE network during an online workshop on 30 April 2020.

The DHET invited all 26 universities' Vice-Chancellors/Rectors to participate in this research, 24 of whom agreed to participate. The SASSE team provided institutions with documentation to support institutional ethics applications where necessary, and the UFS's General Ethics Committee also provided ethical approval for the survey items. As agreed with DHET, participating institutions would receive their participating students' aggregated data sets. To enable additional data analytics, respondents were given the option to provide identifiable information (in the form of student numbers) if they agreed that the UFS could share this information with their institutions for further analyses. Institutions were given the option to request this identifiable information from the UFS on the precondition that the institutions enter into an agreement upholding the Privacy of Personal Information Act (POPIA) of 2013. [2]

Data administration, analysis and distribution

The survey was administered through making use of Questback Experience Management Software, also used for the SASSE surveys. Each institution was provided with a link to the survey, as well as a marketing banner that they were asked to distribute among their registered students. The survey administration dates were 1 August 2020 to 15 September 2020. During this time, 53,223 students responded to the survey (clicked on the link), however, some opted not to participate (N=2,906). While cleaning the data set, 1,336 responses were excluded because of duplication. The duplicate responses were identified either by student numbers (N=725), cellphone numbers (N=537) or email addresses (N=74) provided. Ultimately, the final sample used for analyses in this report consists of 48,981 respondents. This represents around 5% of students registered in public higher education institutions. Of this sample, 69% stated that they were funded by NSFAS, which represents around 6% of the 481,339 students funded by NSFAS in public higher education institutions in 2020 (NSFAS, 2020).

As an incentive to participate, 200 Checkers vouchers, valued at R200 each were offered to students. The recipients of the vouchers were selected from all the valid unique cellphone numbers provided by students. The selection process was aided by a random number generator in Microsoft Excel. The number of vouchers assigned to a specific university was determined by the proportion of students who provided their cellphone numbers from that university in the overall sample. The winners were notified by text message with the voucher code included.

Next, each participating institution received their aggregated (anonymised) data sets by 30 September 2020. Only institutions that returned signed POPIA agreements received identifiable information as agreed on by respondents. To date, six participating universities requested and received identifiable information for further processing.

The quantitative data used for this report was analysed using SPSS software. Certain variables were recoded to make the analysis easier. For example, item 1.8 "Please specify which of your family members have graduated from a university before you" was recoded to indicate students' first-generation status. Those students who indicated that neither their parents have graduated

from a university before them were recoded as "First-generation." A few variables (items 3.6.1 and 3.6.9 - 3.10) had the option "Not applicable" as a possible response category for participants. These variables were recoded to only show the other response categories when reporting on the specific items. For the NSFAS comparisons, item 1.9 (g) was recoded to compare the group of students who said that they used NSFAS to pay their educational expenses to those who said that they did not use NSFAS or were unsure. For the purposes of this report, analysis is limited to descriptive statistics, however, additional inferential analyses might be requested by DHET for a closer look into some data points.

The qualitative data consists of responses students gave to two questions: "What are some of the challenges you experience with technology and learning?" And "what are some of the benefits/ positive things you experience with technology and learning?" Taken together, the qualitative data resulted in 3,672 pages of text. The size of the data set necessitated a multi-pronged approach to analysis, given the timeframe of the report. "Traditional" thematic deductive analysis related to the research questions was done first (i.e. what are students saying about the benefits and challenges of accessing learning materials and devices, and how did their experiences change during lockdown?) This was followed by a more inductive exploration of additional themes emerging from students' positive and negative experiences with education and technology. In addition to the more traditional way of analysing qualitative data, the SASSE team also introduced text mining algorithms tasked with identifying word patterns, trends and frequencies. This complemented the more traditional qualitative analysis, particularly to emphasise the extent of some challenges or to stress the significance of some of the benefits shared by respondents. In order to run the algorithms, the data underwent a cleaning process focusing particularly on rectifying or standardising spelling, without changing the essence or meaning of students' voices.

Beyond the results shared in the current report, the UFS will also compile infographics with key findings to all participating institutions with sample sizes over 50.

Structure of the report and interpretation of data

The structure of the report mirrors the focus of the survey. Section 1 provides an overview of the total sample's findings, including notes on the demographic characteristics of the sample, students' engagement with learning materials, their access to devices, their interactions with educational technology, and their reflections on the benefits and challenges of learning with technology. Because NSFAS students' experiences are central to this report, these students' findings are contrasted with the larger sample, as well as compared to students not funded by NSFAS. Section 2 synthesises the findings of the survey and reflects on possible implications of the data produced by the SAULM survey for teaching and learning as well as policy considerations.

Additional analyses were done to differentiate between the experiences of students who had engaged in distance education prior to COVID-19, postgraduate research students' experiences, as well as differentiating between university types. These groups' analyses are shared in Appendices 1 and 2, however, key points emerging from the data that contribute to the reflections on policy and practice are synthesised in Section 2.

Two important points need to be kept in mind when interpreting the data. First, self-reported

data has the potential of falling victim to dishonesty, exaggeration or downplaying, or manipulation towards certain agendas. In an attempt to get the best data possible, the survey items were rigorously reviewed by a range of stakeholders, items were routed within the Questback system to only allow relevant questions to be answered by respondents (based on their previous answers), different methodological approaches were used to collect and analyse data, and the report distinguishes between different groups' experiences. A second consideration is the sample size and whether data from this sample is representative enough to inform national policies and discussions. While the sector is well represented in the sample, the respondents only represent around 5% of the national higher education population. This would imply careful interpretation of the data. There is a likelihood that many of those who did not participate in the survey could not participate because of a lack of access to devices, network, and data (beyond those choosing not to participate). A promising sign, however, is the consistency of themes that emerged from the qualitative data, regardless of institutional affiliation. The consistency in students' experiences, as well as triangulating qualitative and quantitative data points, provide support for the generalisability of the data and for it to contribute to shaping policy and practice.

Section 1: Students' access to and use of learning materials

1.1 Sample demographics

Figure 1 below shows the sample distribution. Just over 20% of the sample represents students from the University of South Africa (UNISA), followed by 10% representing the UFS and 9% representing the Durban University of Technology (DUT). Traditional universities represent 36% of the sample, Universities of Technology represent 31%, and Comprehensive universities represent 33% (including UNISA).

At which university are you currently registered?

University	Percentage
University of South Africa	21%
University of the Free State	10%
Durban University of Technology	9%
University of Johannesburg	8%
North West University	8%
University of Kwazulu-Natal	6%
Mangosuthu University of Technology	6%
Vaal University of Technology	5%
Cape Peninsula University of Technology	5%
University of Cape Town	5%
Tshwane University of Technology	3%
Nelson Mandela University	3%
University of Pretoria	3%
University of the Western Cape	3%
Central University of Technology	2%
Rhodes University	1%
Walter Sisulu University	1%
University of Mpumalanga	1%
Sol Plaatje University	0%
University of Stellenbosch	0%
University of Fort Hare	0%
Sefako Makgatho Health Sciences University	0%
University of Limpopo	0%
University of Venda	0%

Figure 1 Participating universities

Almost two-thirds of the sample are female (63%), while racially, the sample consists of 84% African students, 3% Asian/Indian students, 5% Coloured students, and 6% White students. Around 82% indicated that they were first-generation students. Over half of the sample were based in Gauteng and KwaZulu-Natal (27% each) at the time of administration, with 219 participants (less than 1%) responding from outside South Africa (Figure 2).

Which province have you been based in most of the time while engaging in remote (distance/online) teaching and learning?
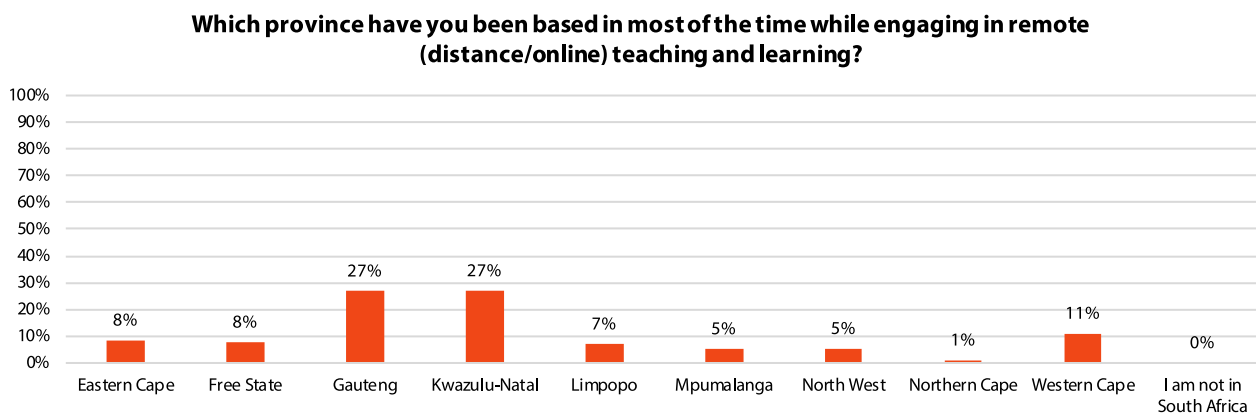
Figure 2 Province based in during remote learning

What type of qualification are you currently registered for?
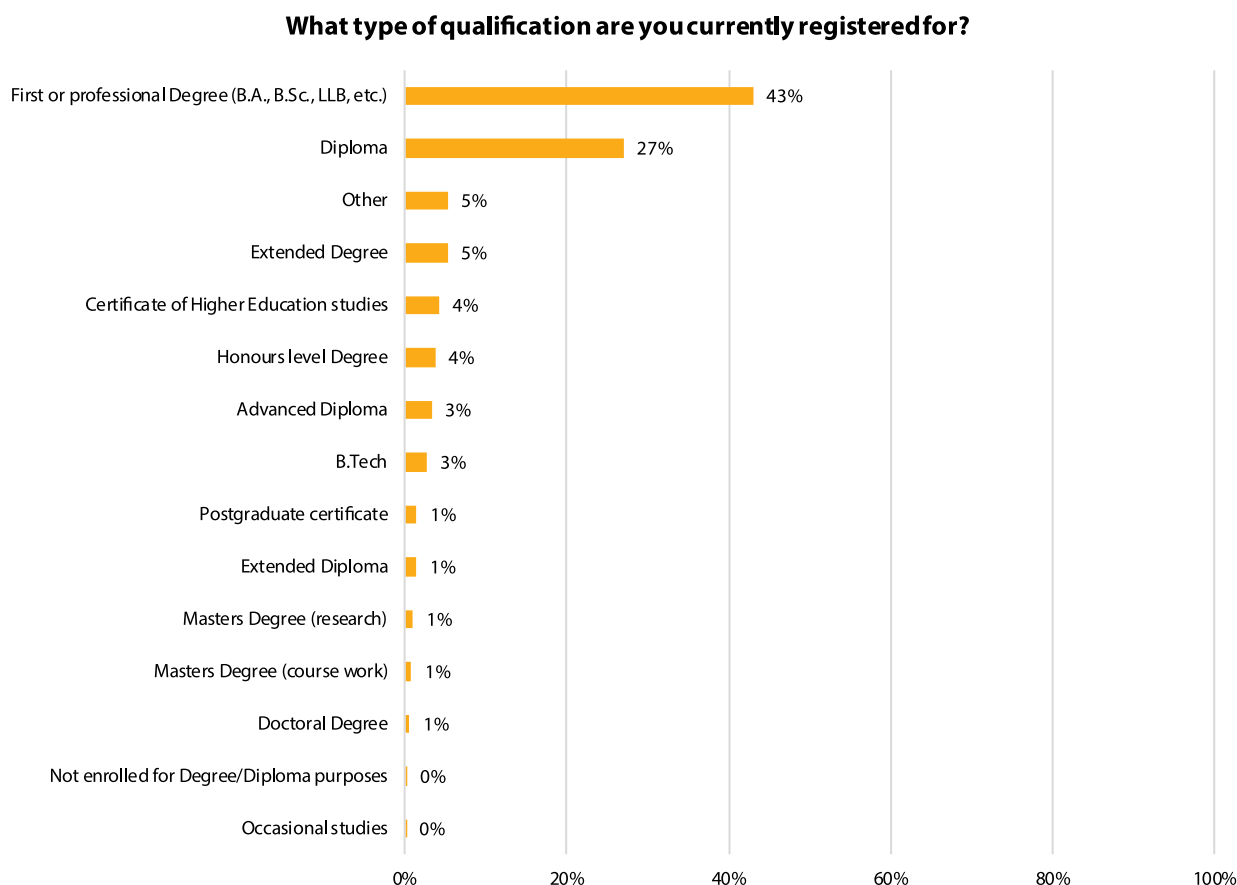
Figure 3 Registered qualification type

89% of the sample is undergraduate students, of which 37% are first-year students. Figure 3 outlines the qualifications students are registered for. Almost half of the sample (43%) is registered for a first Bachelor or professional degree. Almost a third (32%) are registered for diplomas and only 5% of the sample is registered for extended degrees.

Please indicate in which broad field of study you are registered.
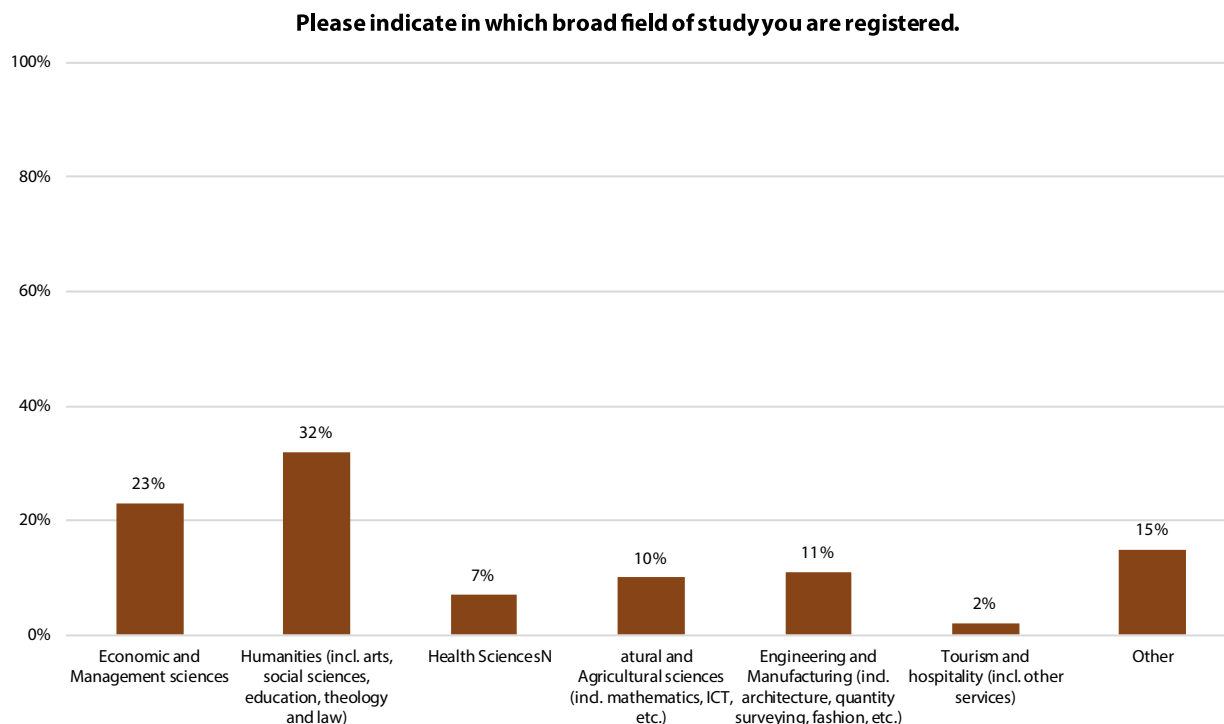
Figure 4 CESM categories

Figure 4 shows the respondents' indication of Classification of Educational Subject Matter (CESM) categories they are registered in. Almost a third (32%) of participants are registered in Humanities and related fields, while almost a quarter (23%) are registered in Economic and Management Sciences fields.

Which of the following sources are you using to pay your educational expenses?
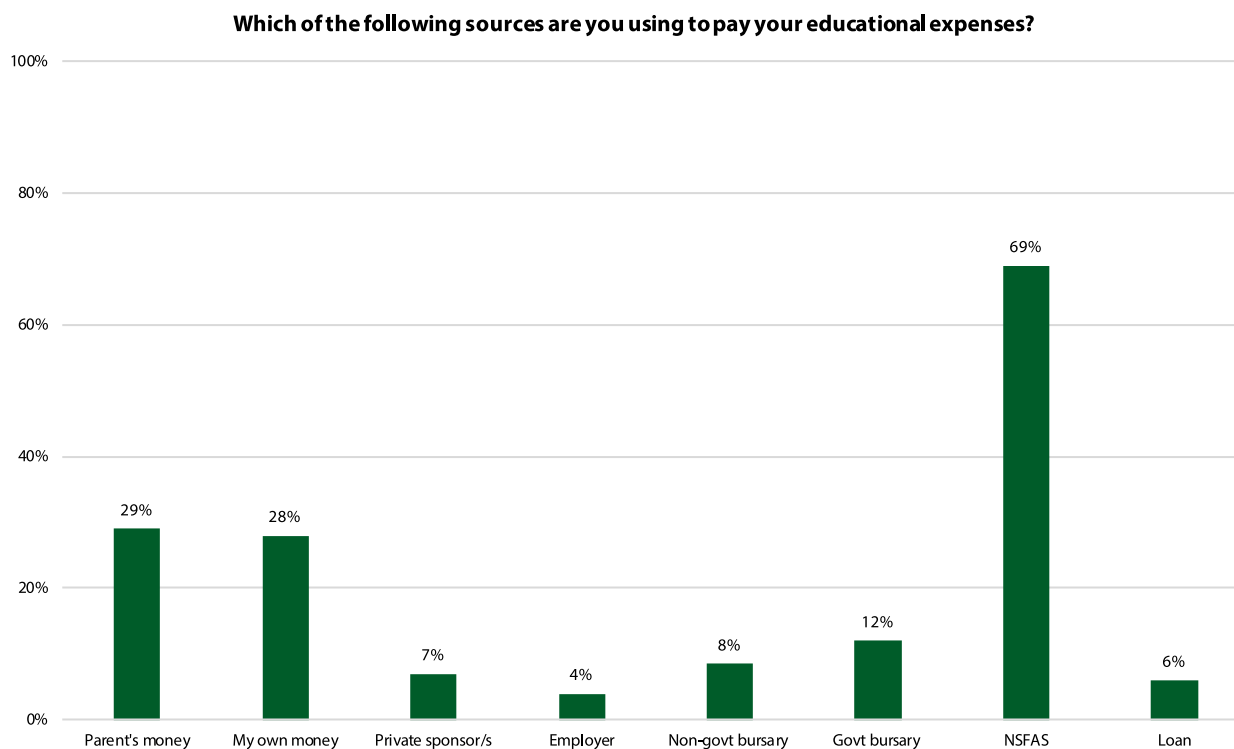
Figure 5 Source of funding to pay for studies

Almost 70% of the sample indicates that they use NSFAS funding to pay for their studies, while almost 30% indicates that they use their parents' or their own money, respectively. Respondents

could select more than one source of funding (Figure 5).

1.2 Learning materials

Students were asked how many of their modules had moved to remote learning during the first semester of 2020. Figure 6 shows that 77% had modules move to remote learning, while 18% were current distance students, with no modules moving to remote learning, and 5% indicated that they did not have any modules move to remote learning.

How many of your modules/courses were moved to remote (distance/online) teaching and learning during the first semester of 2020?
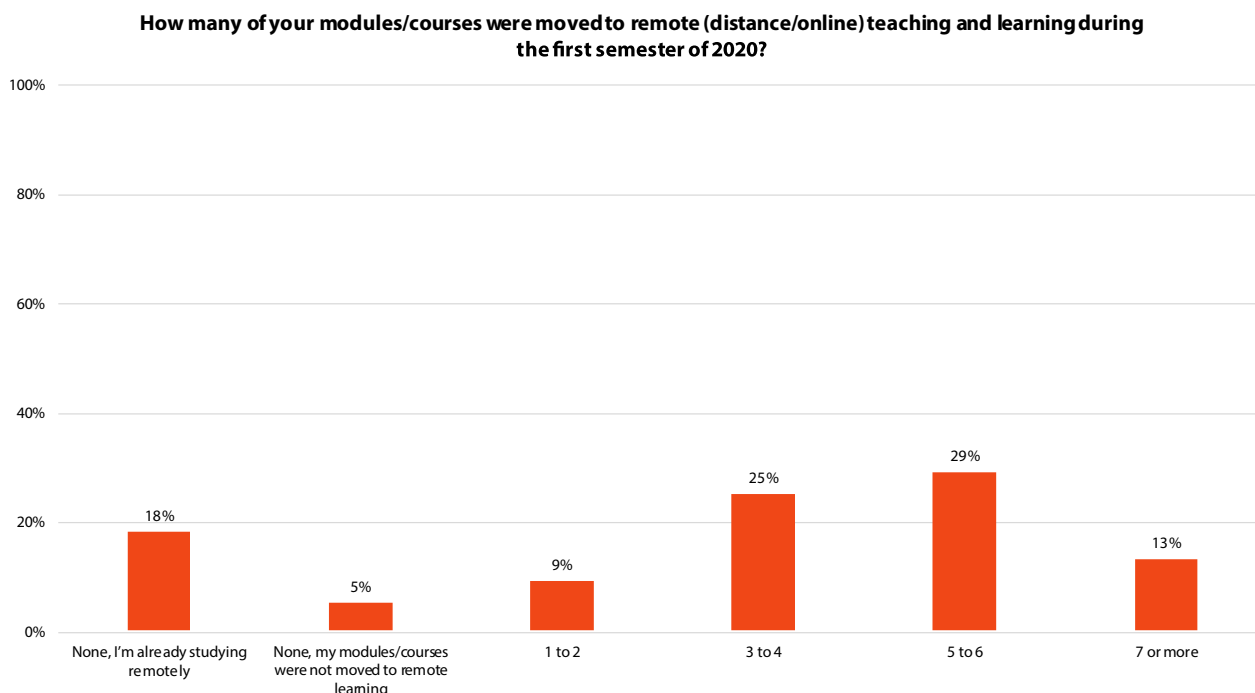
Figure 6 Number of modules moved to remote learning

Students were asked to indicate how many of their first semester modules had prescribed text-books. Figure 7 shows that 13% of the sample did not have any modules that required prescribed textbooks. The majority (37%) had three to four modules with prescribed textbooks. Flowing from this, the SAULM survey asked students whose modules had textbooks whether they bought these books. While around three quarters indicated that they bought at least one prescribed textbook, 26% of students who had prescribed textbooks for the first semester in 2020 did not buy any (Figure 8). When looking at NSFAS students specifically, Figure 9 shows that only 22% did not buy any books, compared to 35% of students not receiving NSFAS funding.

How many of your modules have prescribed textbooks?
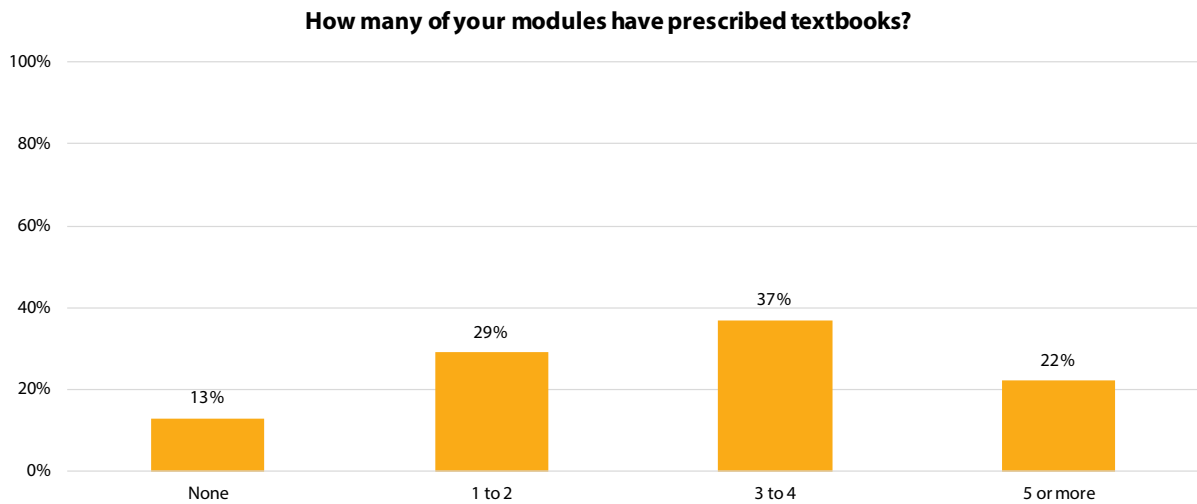
Figure 7 Number of modules with prescribed textbooks

How many of the prescribed textbooks did you buy?
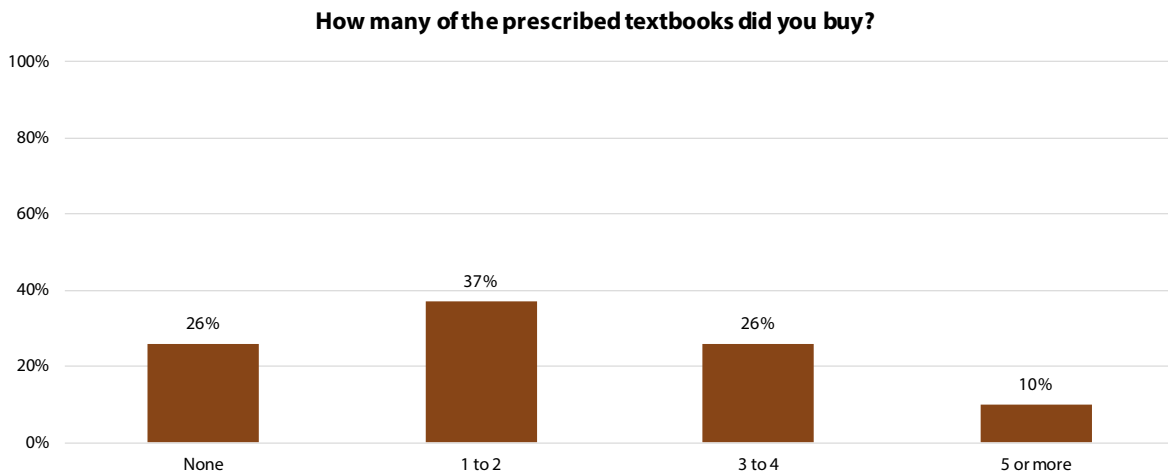
Figure 8 Number of prescribed textbooks purchased

How many prescribed textbooks did you buy?

■NSFAS ■Not NSFAS
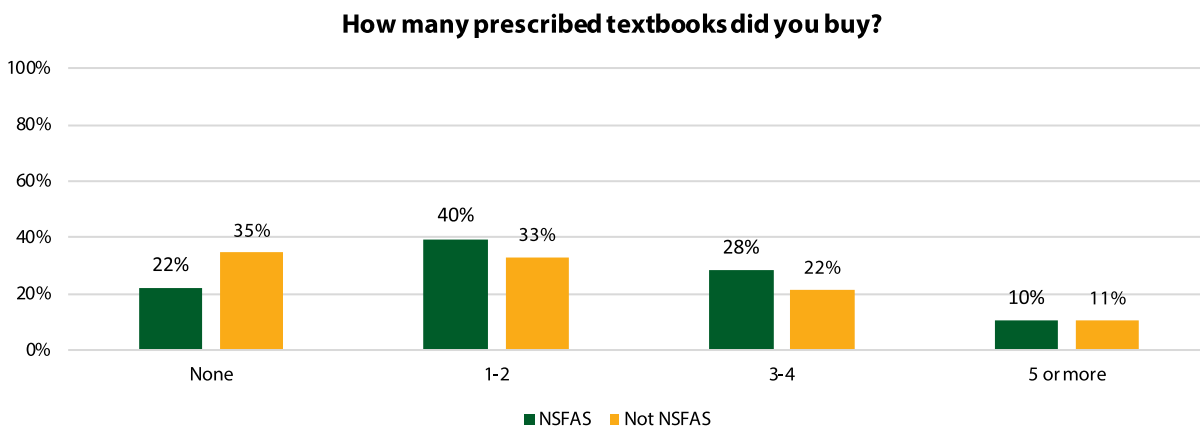
Figure 9 Number of prescribed textbooks purchased by NSFAS students

It seems that students do not buy all the books prescribed in different modules. When asked how much money on average participants spent on textbooks during the first semester in 2020, around two thirds (62%) indicated that they spent between R500 and R2500 (Figure 10). There

is no marked difference in the average amount NSFAS students spent on textbooks (Figure 11). Figure 12 shows that of those who did purchase textbooks, just over half (56%) bought them new from campus-based or off-campus based bookstores, while 42% bought their textbooks second-hand from friends or fellow students. NSFAS students bought fewer new textbooks, but more second-hand textbooks (Figure 13). This means that while NSFAS students bought more textbooks than non-NSFAS students, they spent more or less equal amounts because they bought second-hand books – presumably at a better rate than new books.

How much money on average did you spend on all your prescribed textbooks?
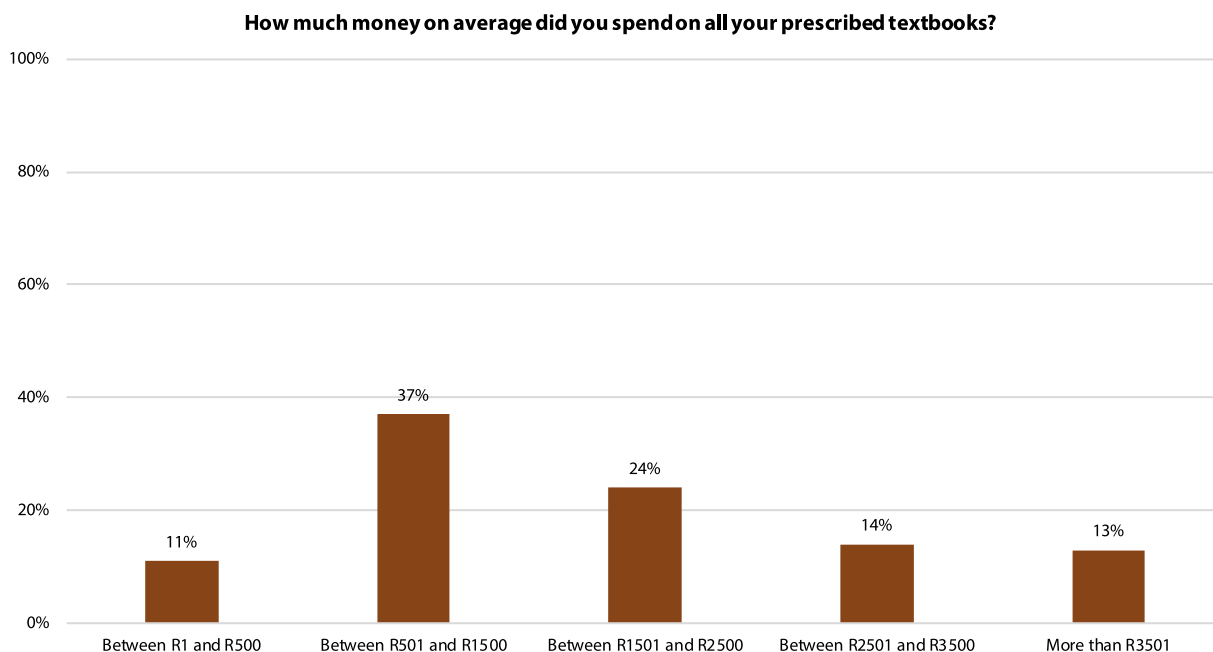
Figure 10 Average amount spent on purchasing prescribed textbooks

How much money on average did you spend on all your prescribed textbooks?
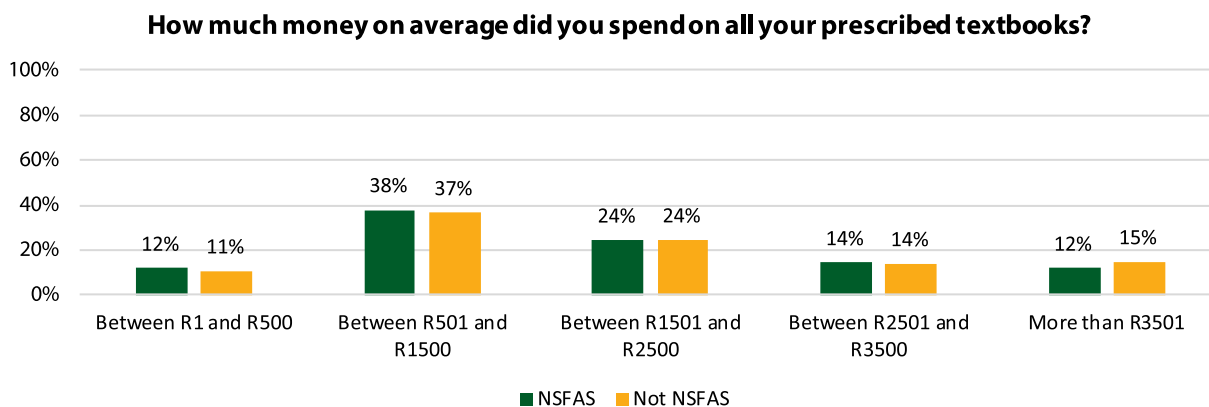
Figure 11 Average amount spent on purchasing prescribed textbooks by NSFAS students
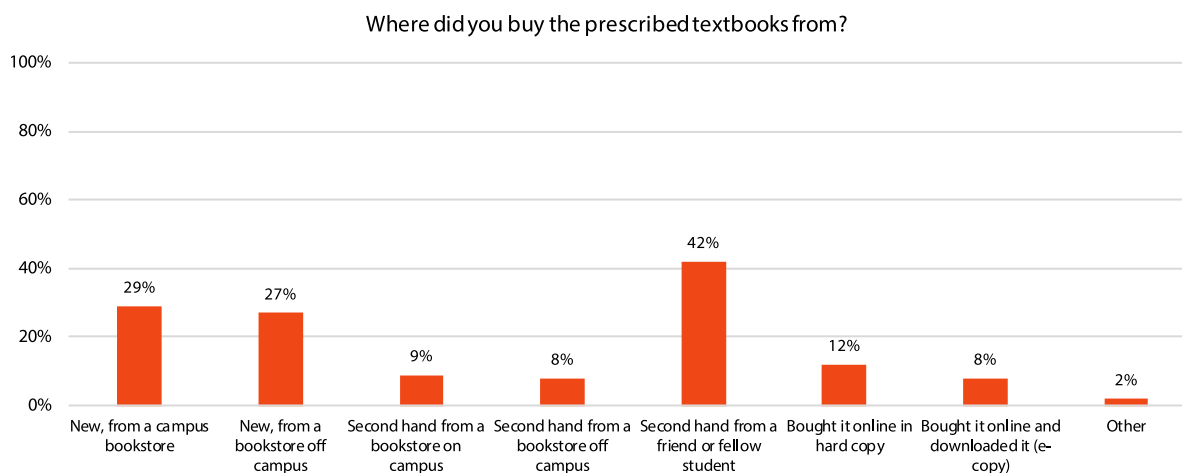
Figure 12 Places students buy prescribed textbooks from
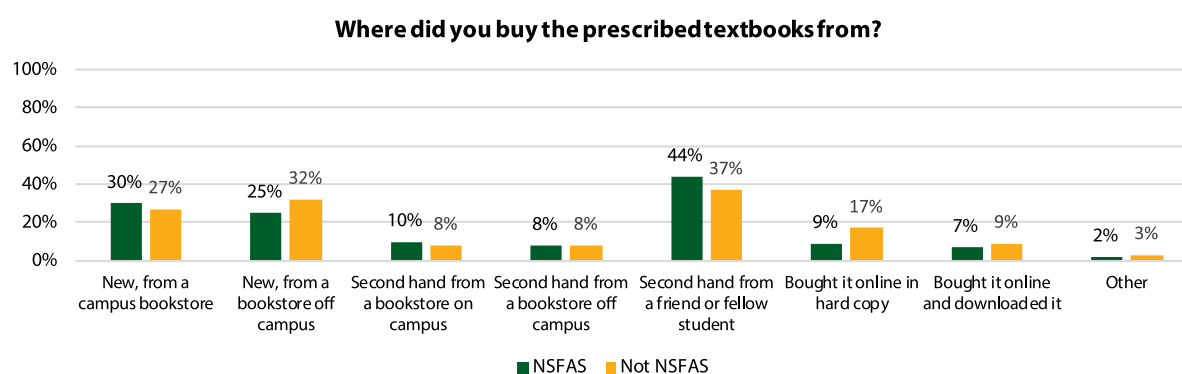
Figure 13 Places NSFAS students buy prescribed textbooks from

Students who indicated that they did not buy textbooks (N=11,132) were asked in which other ways they were able to access these books. Figure 14 shows that 19% of these students did not have access to textbooks at all, and 68% used electronic means to access books (29% through sharing or downloading illegal copies, and 23% downloaded textbooks through open access channels).
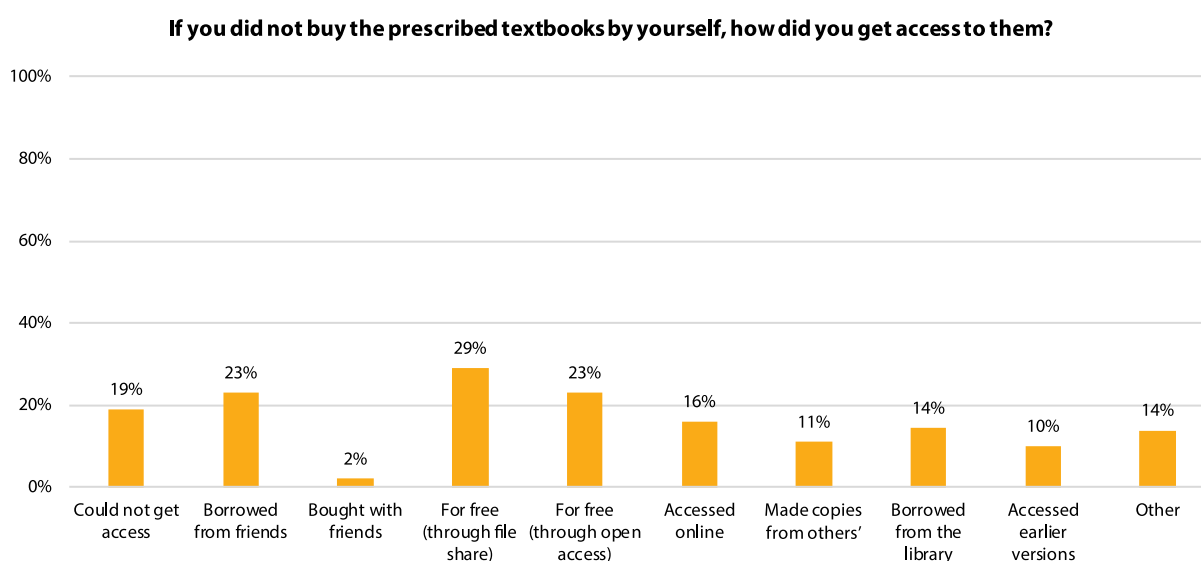
Figure 14 Alternative ways of accessing prescribed textbooks

Of the NSFAS students who did not purchase any textbooks (N=5,896), 17% could not access

prescribed textbooks, while similar numbers of NSFAS-funded and other students downloaded copies of textbooks through legal (open access) and less legal (file share, torrent, etc.) means (Figure 15).

If you did not buy the prescribed textbooks yourself, how did you get access to them?
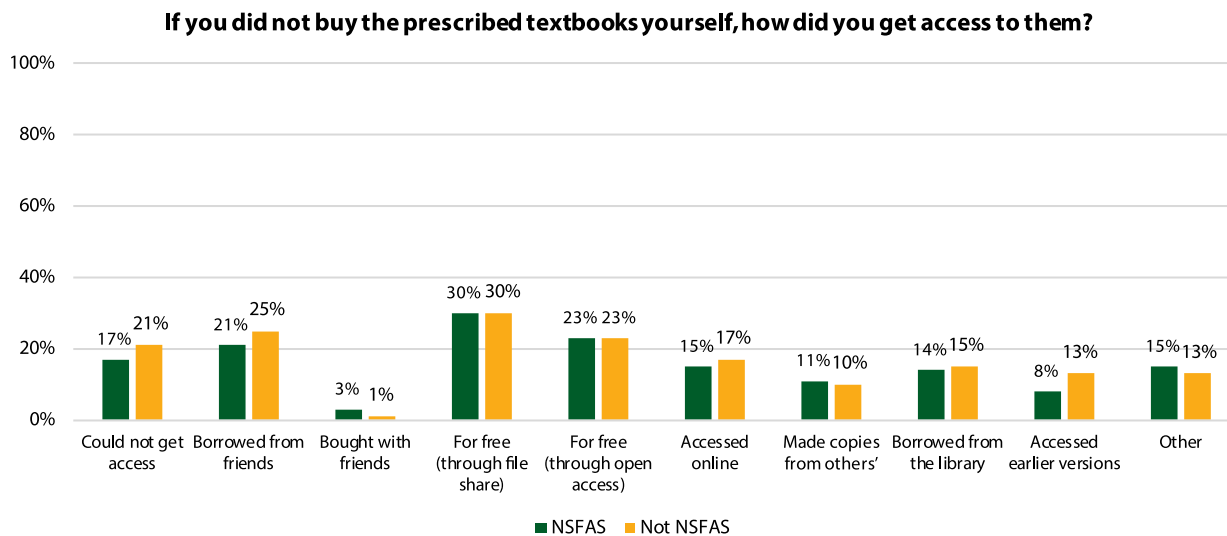
Figure 15 Alternative ways NSFAS students access prescribed textbooks

Students were asked to indicate the main reason why they would not purchase prescribed textbooks if they had a choice. Almost 40% indicated that textbooks were too expensive, while around a third stated that they would always choose to buy textbooks. Less than 10% said that they would choose not to buy textbooks because they were available in the library or that they would not buy a textbook if the whole book was not used, respectively (Figure 16). While just over a third of NSFAS students indicated that they would not purchase prescribed textbooks because of the cost of these books, a similar number (and more than non-NSFAS students) indicated that they would always choose to buy prescribed textbooks (Figure 17).

Please provide the main reason why you would _choose not to buy_ a prescribed textbook, even if you had the money.
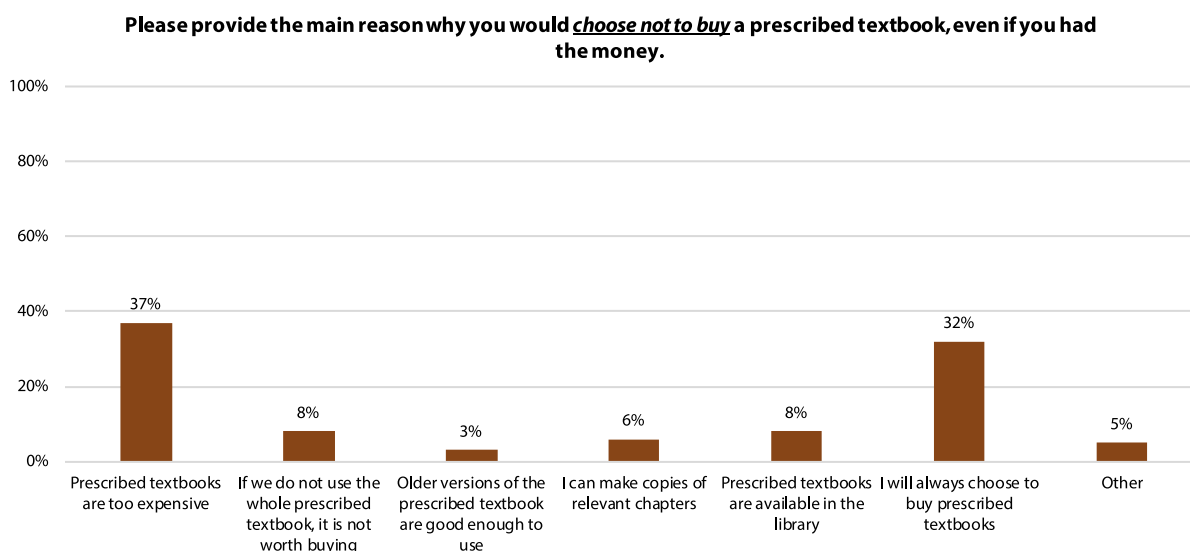
Figure 16 Main reasons why students would choose not to buy textbooks

Please provide the main reason why you would _choose not to buy_ a prescribed textbook, even if you had the money.
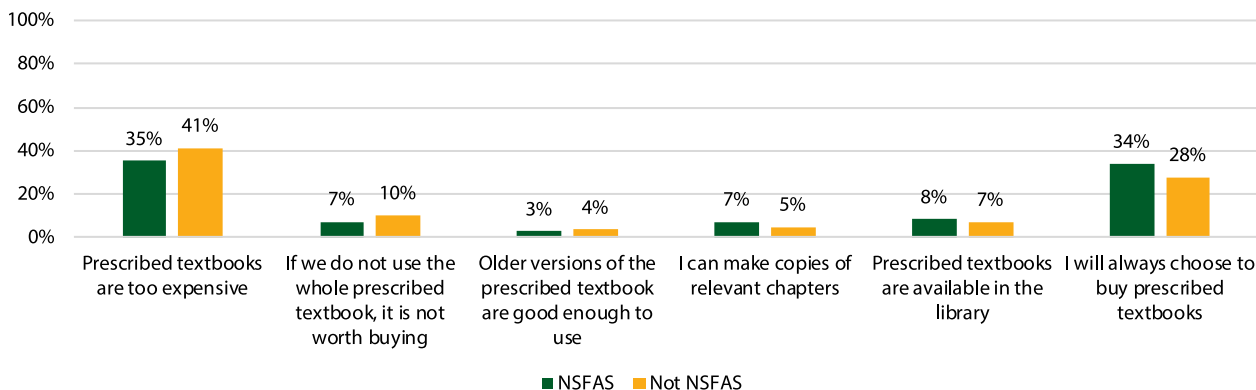
Figure 17 Main reasons why NSFAS students would choose not to buy textbooks

In addition to students' engagements with prescribed textbooks, the SAULM survey asked participants about additional learning materials. 90% of respondents indicated that they had additional learning materials, which consisted mostly of lecturers' summaries (81%), study guides (66%), online videos (66%) quizzes or other activities (54%), and tests from previous years (41%; Figure 18).

Which other learning materials did your modules/courses make use of?
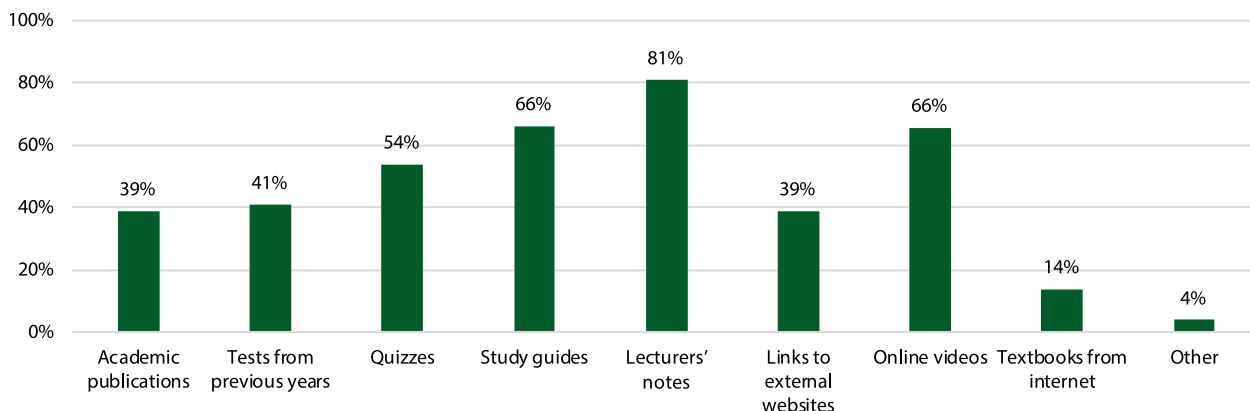
Figure 18 Type of learning materials students engage with

When asked to distinguish how respondents accessed these learning materials before moving to remote learning and after, the majority indicated that they either got learning materials directly from their lecturers or by downloading them from the institutional Learning Management System (LMS) before lockdown (Figure 19). As expected, much fewer students received learning materials directly from their lecturers during lockdown, and more students made use of electronic means to download information from the LMS or other platforms. There was also slightly less reliance on other classmates or students who completed the module in previous years to access learning materials – a strong theme also confirmed in the qualitative contributions discussed later. For NSFAS students, Figure 20 shows slightly more reliance on printed copies, getting information from friends, and more NSFAS students who could not access their learning materials during remote learning than their non-NSFAS counterparts. While both groups were able to download learning materials from the institutional LMS at a similar rate during remote learning, NSFAS students downloaded less alternative materials beyond the LMS, regardless of the source.

How did you access the learning materials (excluding prescribed textbooks)?
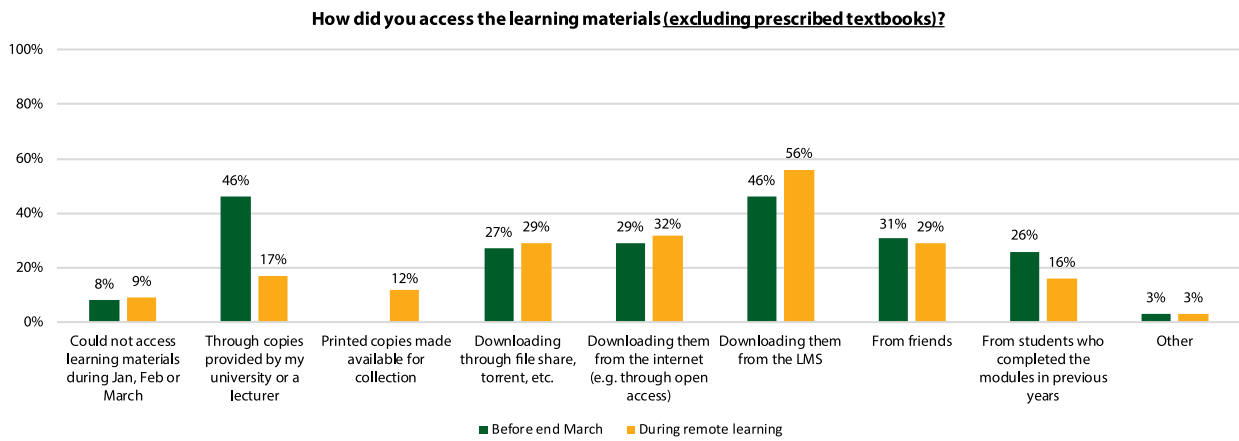
Figure 19 Access to learning materials before and during lockdown

How did you access the learning materials (excluding prescribed textbooks)?
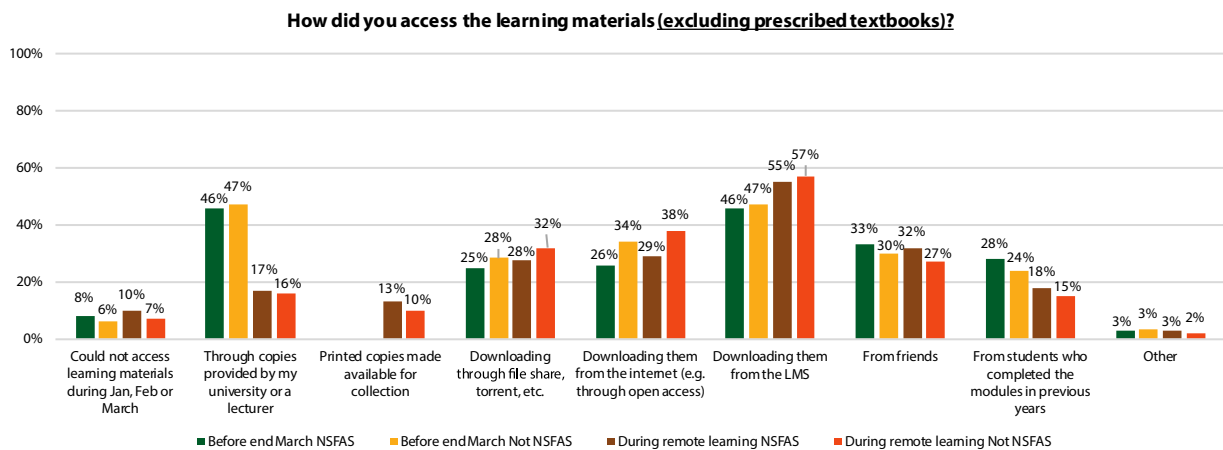
Figure 20 NSFAS students' access to learning materials before and during lockdown

Of the approximately 2,000 students whose modules did not move to remote learning, 73% were continuing with self-study and 43% were spending time on revision (Figure 21). 17% of this group could not access any new learning materials during this time and 11% indicated that they were not engaging with their studies at all during lockdown. Around 1,492 NSFAS students indicated that their modules did not move to remote learning. Figure 22 shows that 18% of this group could not access any new learning materials during this time, with slightly fewer NSFAS students continuing with self-study and slightly more spending time on revision than non-NS-FAS students.

If your face-to-face/contact modules did not move to remote (distance/online) learning, how are you engaging with your learning materials and studies?
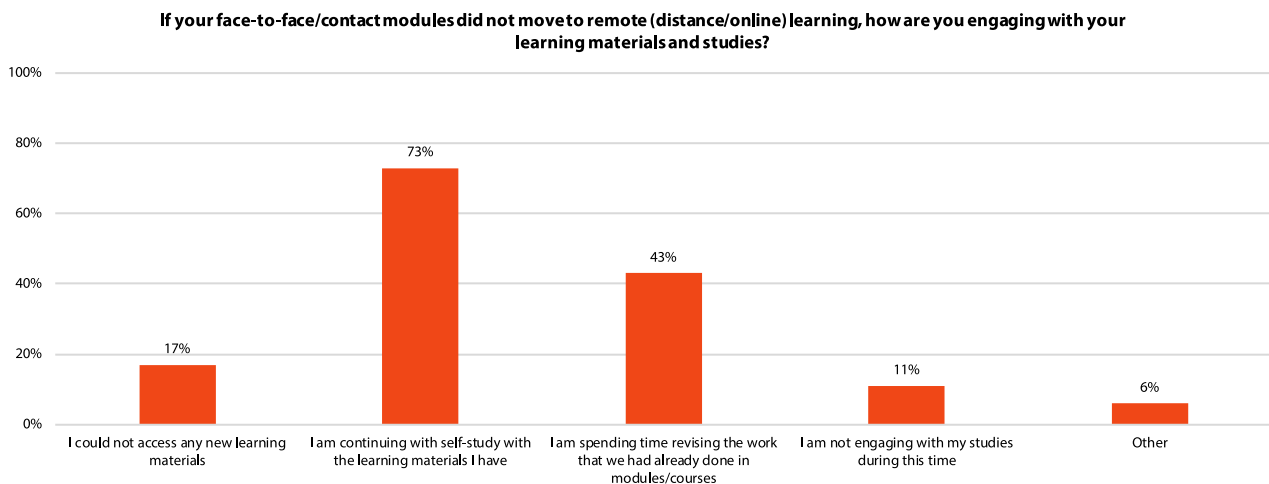
Figure 21 How students are continuing with studies if modules did not move to remote learning

If your face-to-face/contact modules did not move to remote (distance/online) learning, how are you engaging with your learning materials and studies?
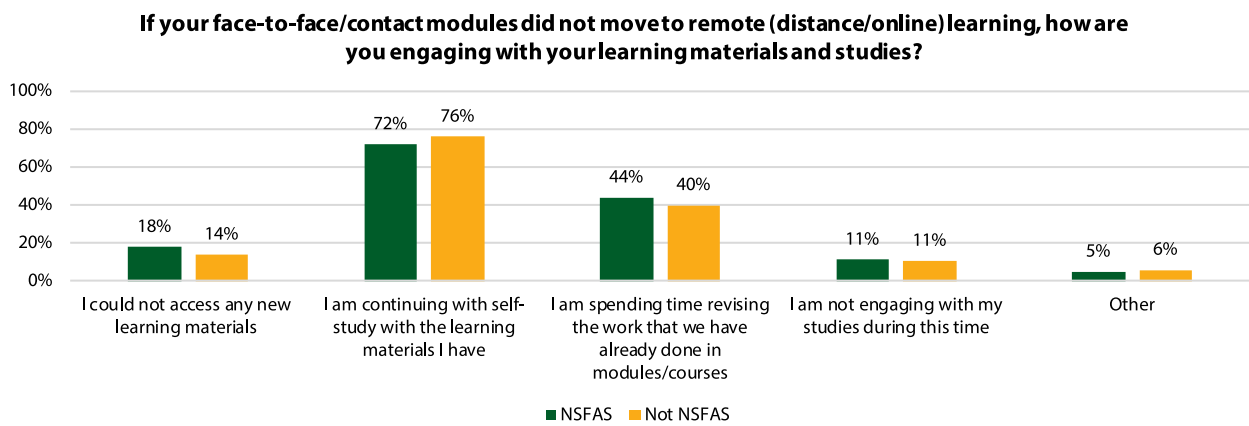
Figure 22 How NSFAS students are continuing with studies if modules did not move to remote learning

1.3 Access to devices, data and connectivity

In order for students to effectively engage with learning materials and educational technology, they needed to have access to devices and data. Students were asked how many devices they owned that they could use to engage with their studies. Figure 23 shows that 96% of respondents owned a device (the majority, 90% owned 1-2 devices). Of those who owned devices, 89% stated that they owned a smartphone, while around 60% owned laptops (Figure 25).Similar to the larger sample, 96% of NSFAS students owned devices, of whom almost half owned one device. Almost 20% fewer NSFAS students owned laptops than non-NSFAS students, and 90% indicated that the device they owned was a smartphone (Figures 24 and 26).

When you are not on campus, how many electronic devices do you own that you can use to engage with your learning (e.g. desktop computer, laptop, tablet, smartphone, etc.)?
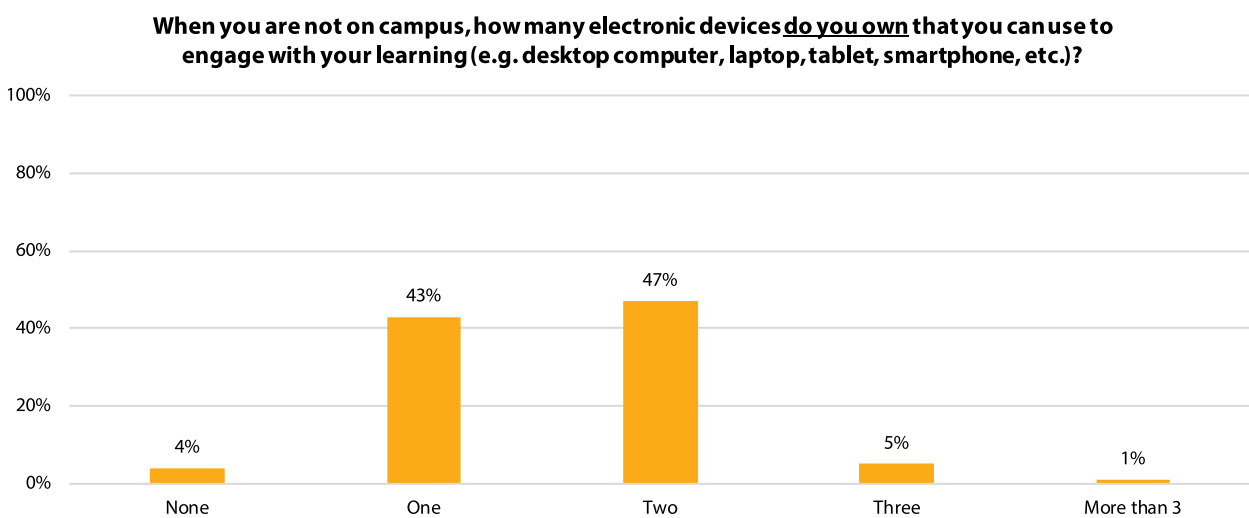
Figure 23 Number of devices owned by students

When you are not on campus, how many electronic devices do you own that you can use to engage with your learning (e.g. desktop computer, laptop, tablet, smartphone, etc.)?
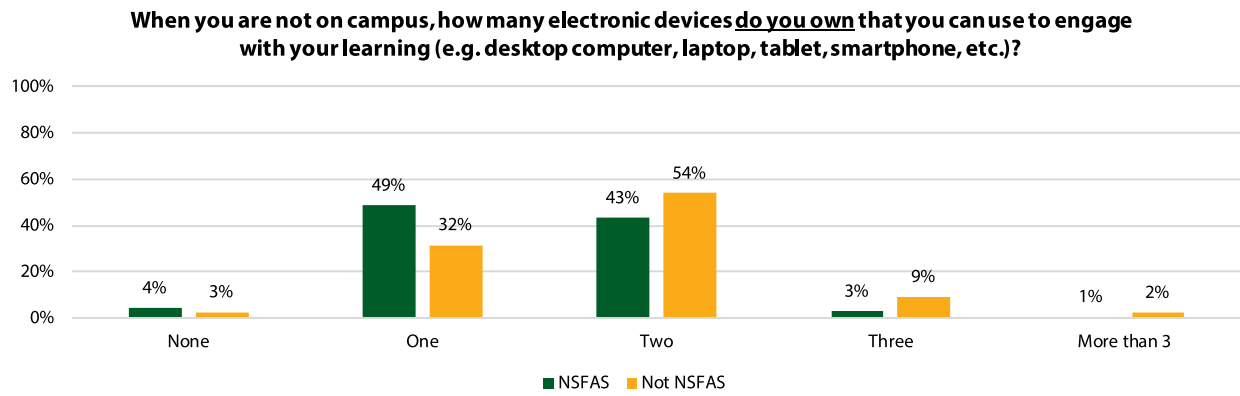
Figure 24 Number of devices owned by NSFAS students

Please indicate which devices you own and use to engage with your studies when you are off-campus.
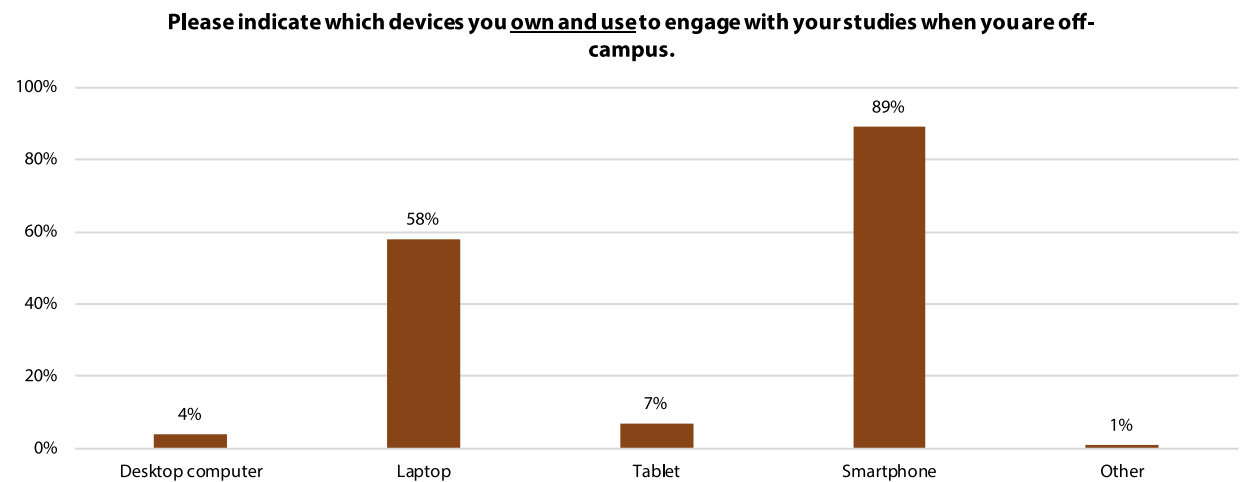
Figure 25 Types of devices students own

Please indicate which devices you own and use to engage with your studies when you are off-campus
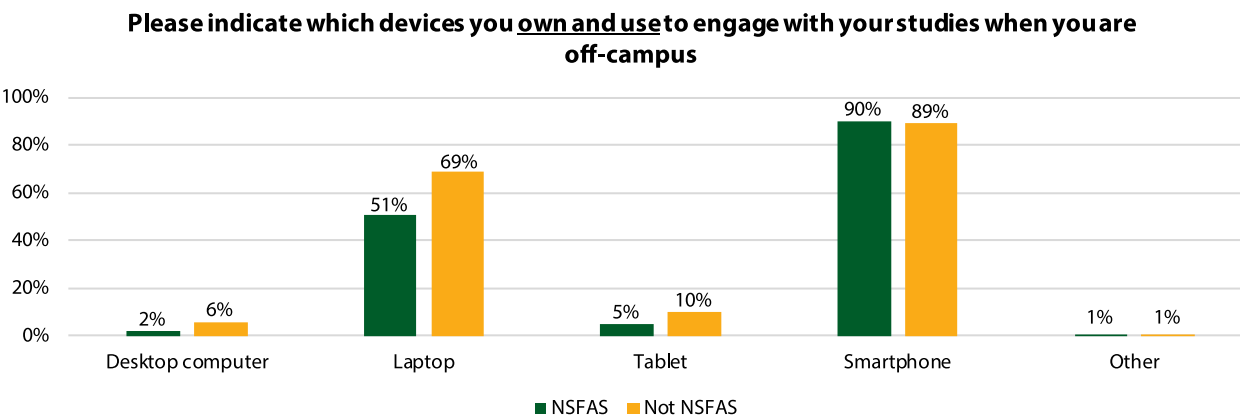
Figure 26 Types of devices NSFAS students own

When asked how students obtained the devices they own, 69% indicated that they either bought them themselves or they were bought for them by a family member. A third indicated that they bought them with their NSFAS allowance and 8% stated that they obtained their devices through their institutions (Figure 27). Of the NSFAS students who owned devices, half (50%) indicated that they used their NSFAS allowance to purchase devices (Figure 28).

Please indicate how you got your devices.
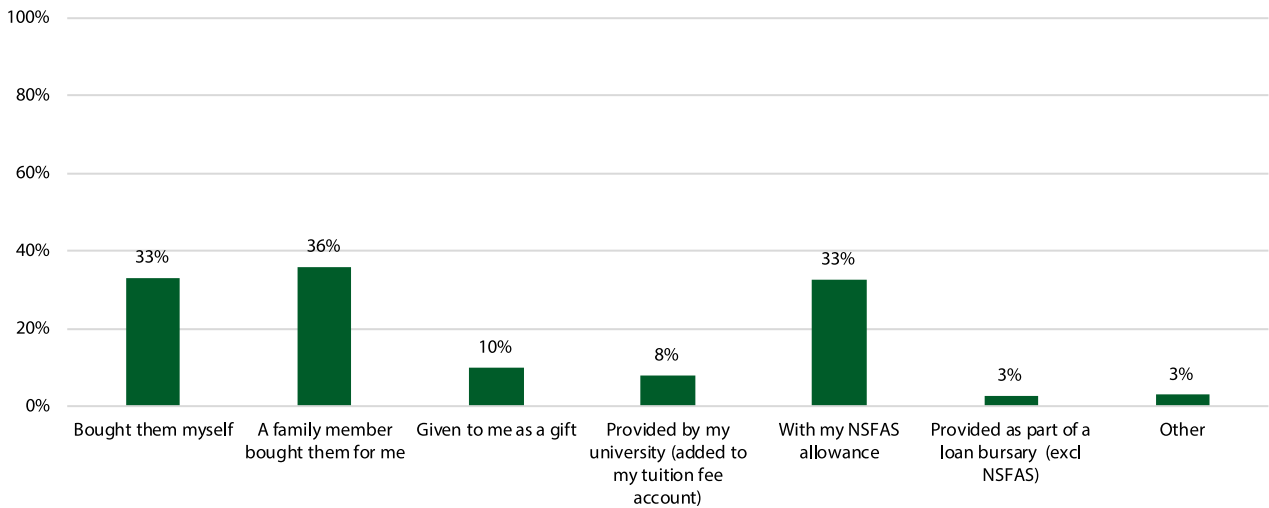
Figure 27 How students got the devices they own

Please indicate how you got your devices.
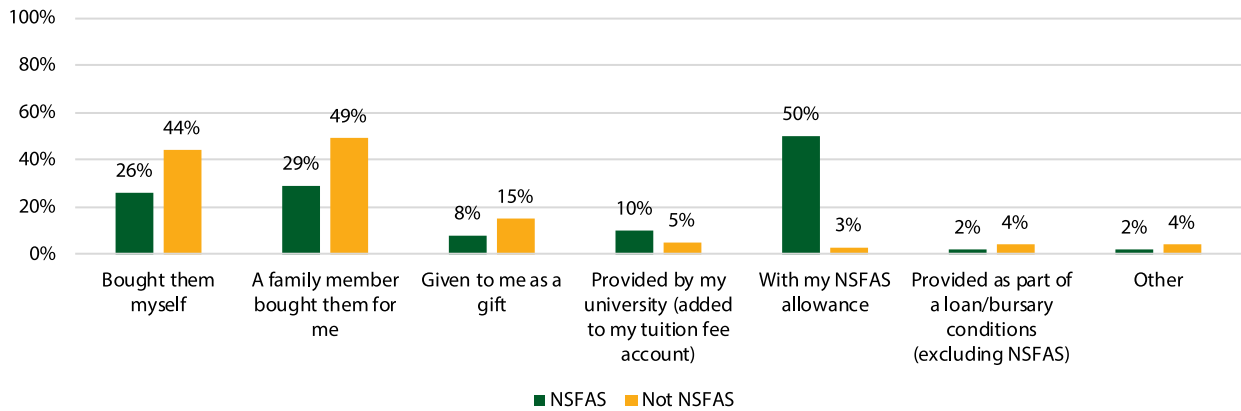
Figure 28 How NSFAS students got the devices they own

Three quarters (73%) of the 4% (N=1,851) of students who indicated that they did not own any devices stated that they had access to a smartphone, and 17% had access to a laptop. The majority of these students borrowed devices from family members (56%) or friends (38%; Figures 29 and 31). Around a third (32%) made use of internet cafes to access devices. Similar trends were seen for the 1,338 NSFAS students who did not own devices, with 73% who had access to smartphones and the vast majority (96%) borrowing from family and friends (Figures 30 and 32).

If you do not own any devices, but still have access to one or more devices to engage with your studies off-campus, which devices do you have access to?
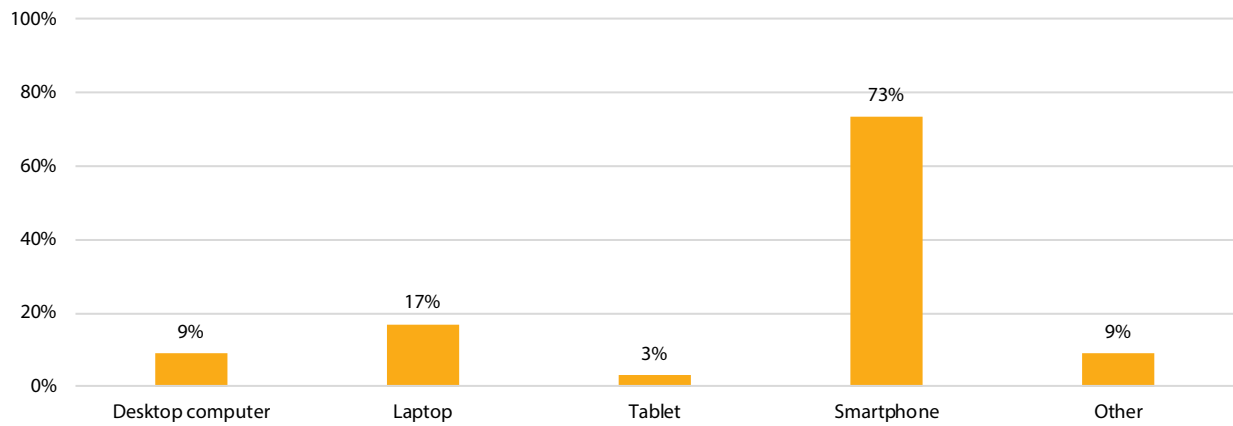
Figure 29 Type of devices students who do not own any devices have access to

If you do not own any devices, but still have access to one or more devices to engage with your studies off-campus, which devices do you have access to?
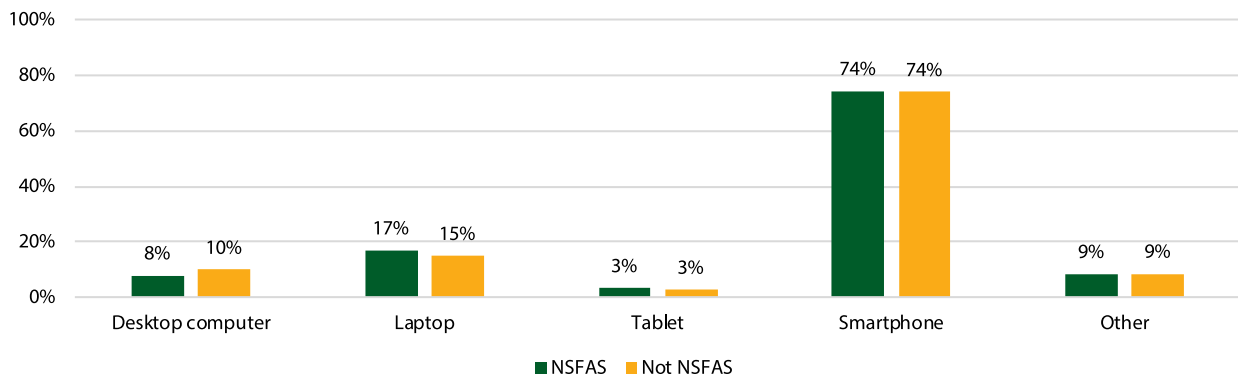
Figure 30 Type of devices NSFAS students who do not own any devices have access to

If you do not own any devices, but still have access to one or more devices to engage with your studies off-campus, how do you get access to these devices?
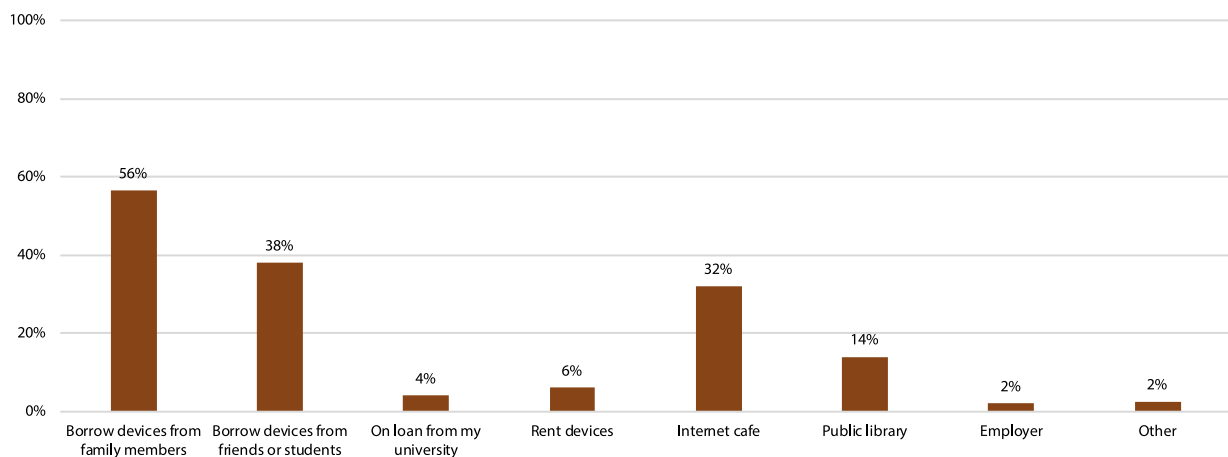
Figure 31 Access to devices for students who do not own any

26

If you do not own any devices, but still have access to one or more devices to engage with your studies off-campus, how do you get access to these devices?
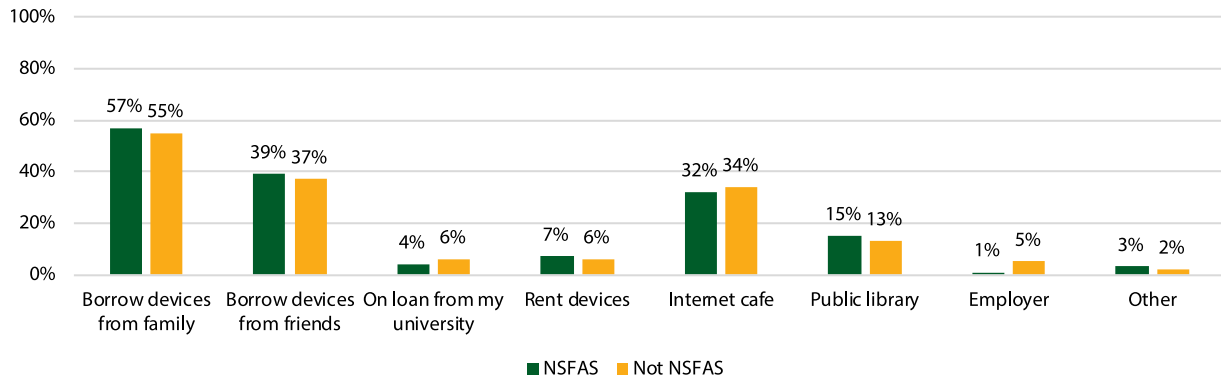
Figure 32 Access to devices for NSFAS students who do not own any

Students were asked to rate how easy or difficult it was to engage with their studies using different devices. Figures 33 and 34 show that half (50%) of all respondents found that using a smartphone for academic purposes was somewhat to very difficult. In contrast, of those who used laptops, 18% found it difficult. NSFAS students found it slightly more difficult to use desktops, laptops and smartphones.

In general, how easy is it to engage with academic activities such as assignments, tests, or working with learning materials using the following devices?
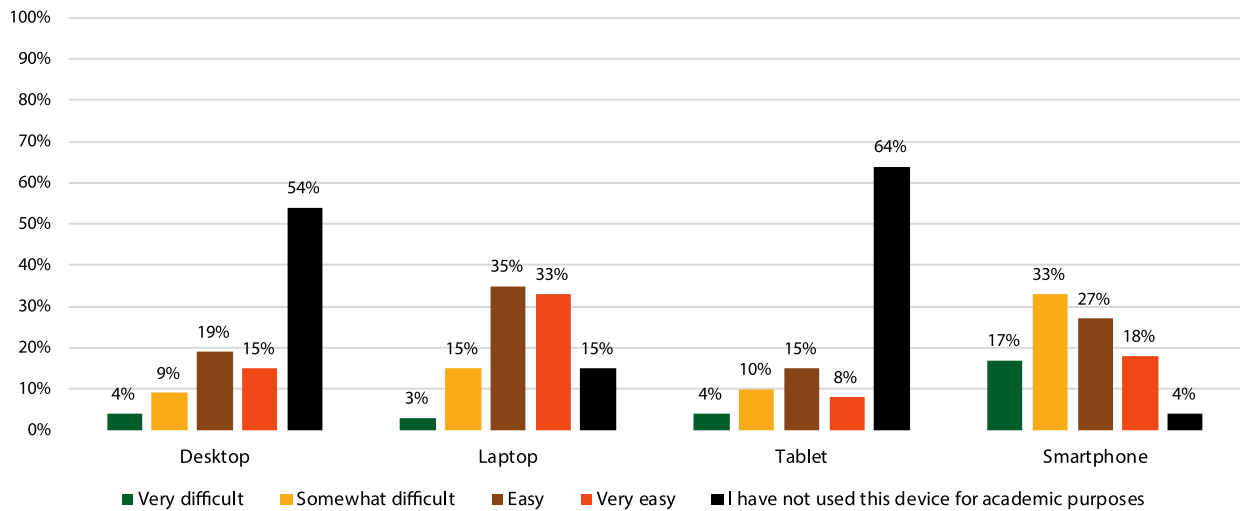
Figure 33 Ease of device use for engaging with studies
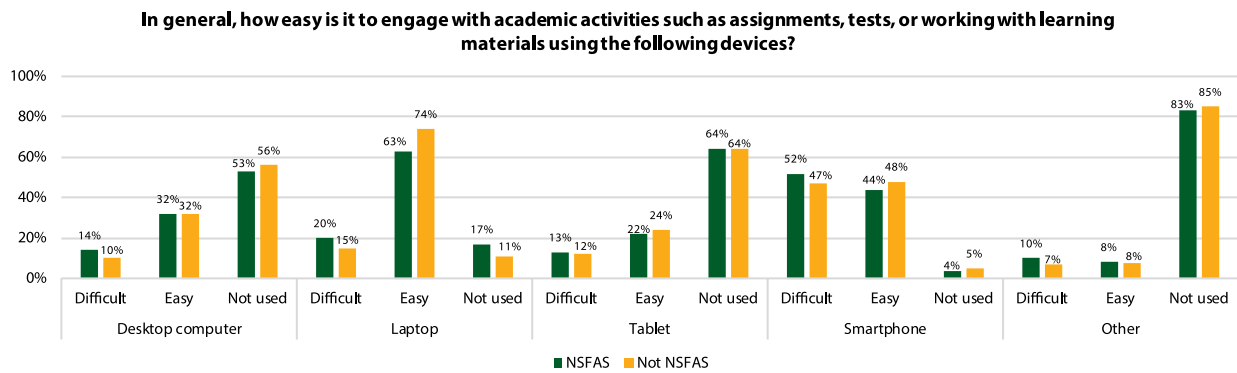
Figure 34 Ease of device use for NSFAS students for engaging with studies

1.4 Engagement with educational technology

Beyond having access to devices, in order to effectively engage with educational technology, students need conducive environments to study in, adequate data, and the necessary skills to engage with technology. Figure 35 below shows that 20% of students were not able to charge their devices when needed, more than half (54%) did not have a quiet place to study, and half (50%) indicated that they had appropriate network connection. Fewer NSFAS students had adequate access to network connectivity, electricity and a quiet place to study (Figure 36).
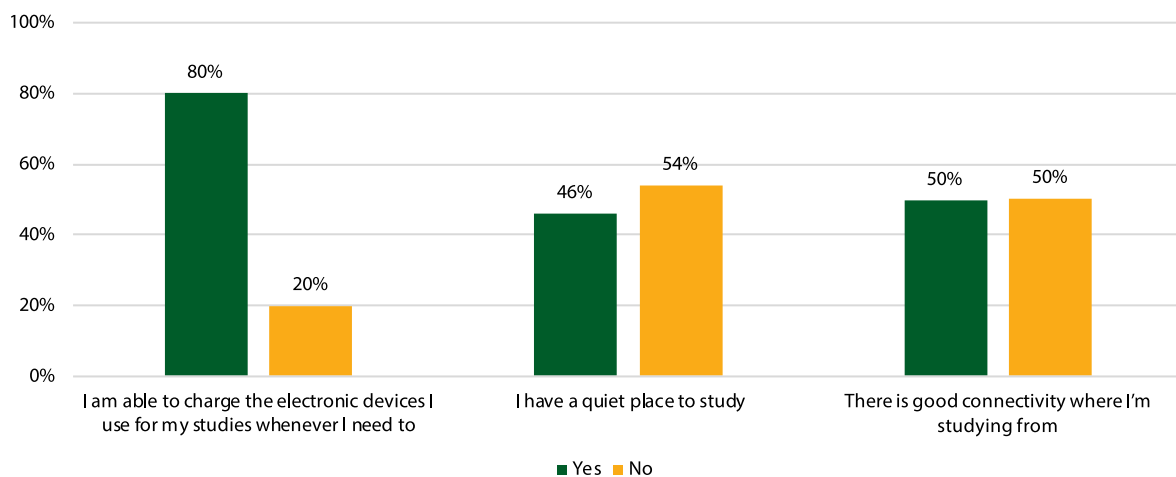
Figure 35 Access to infrastructure and conducive environment
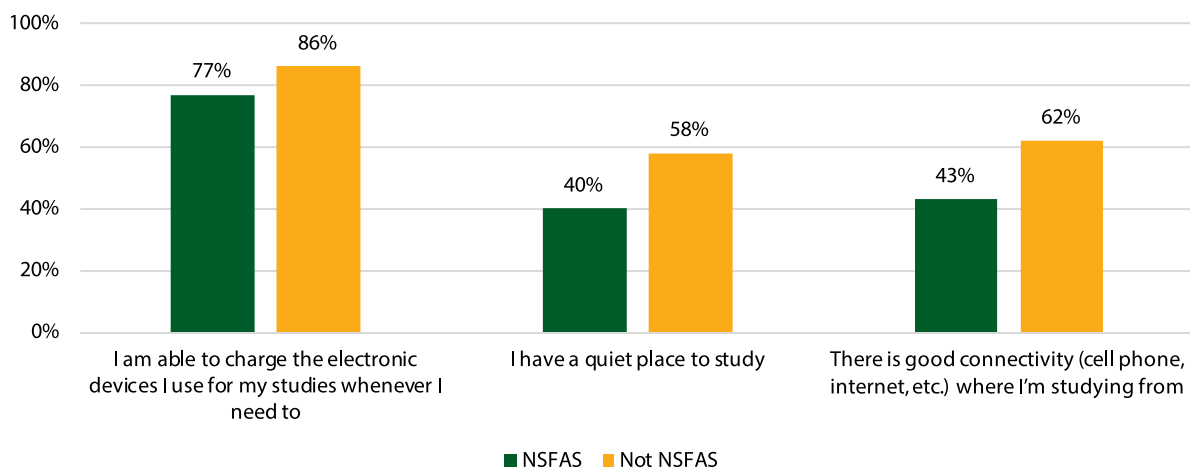
Figure 36 Access to infrastructure and conducive environment for NSFAS students

28

Students were asked to identify which online activities they had been engaging in during remote learning. Figure 37 shows that the majority (92%) submitted assignments, 78% downloaded learning materials, 76% wrote tests online, 73% used email as a communication channel, 71% accessed learning materials online and 65% took quizzes. While 70% of respondents engaged with classmates through online chats, only 45% formally engaged in online group work. Figure 38 shows that NSFAS students in general engaged less with online activities than non-NSFAS funded students during remote learning. While similar engagements could be seen with assessments, NSFAS students engaged around 10% less in emails, virtual classes, and accessing learning materials online.

Which online activities have you engaged in?
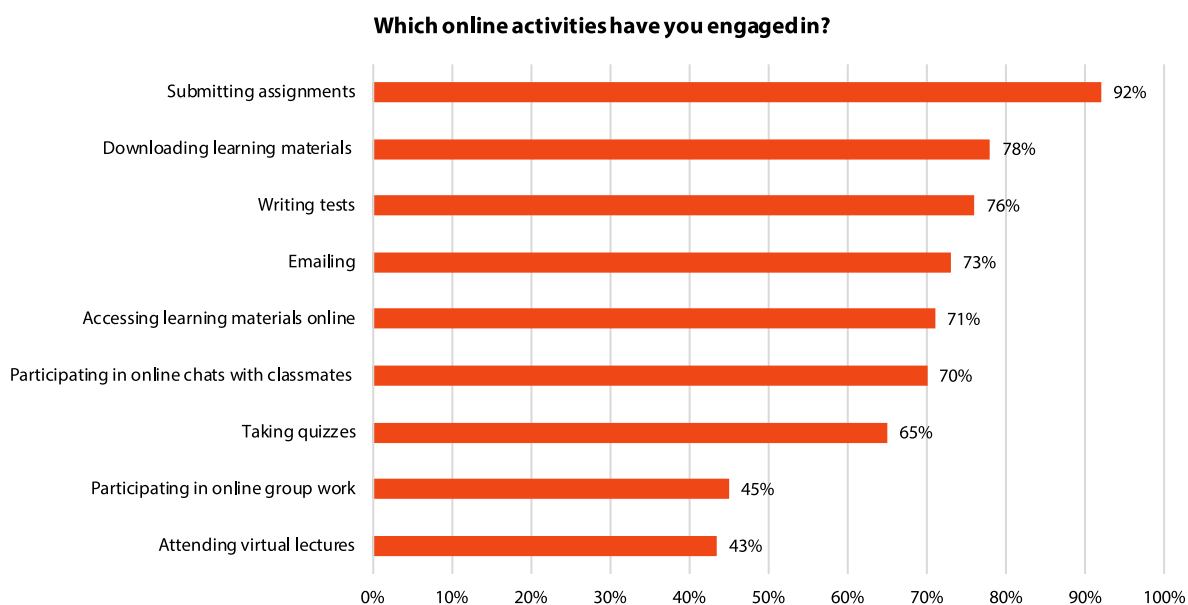
Figure 37 Online activities students engaged in during remote learning

Which online activities have you engaged in?
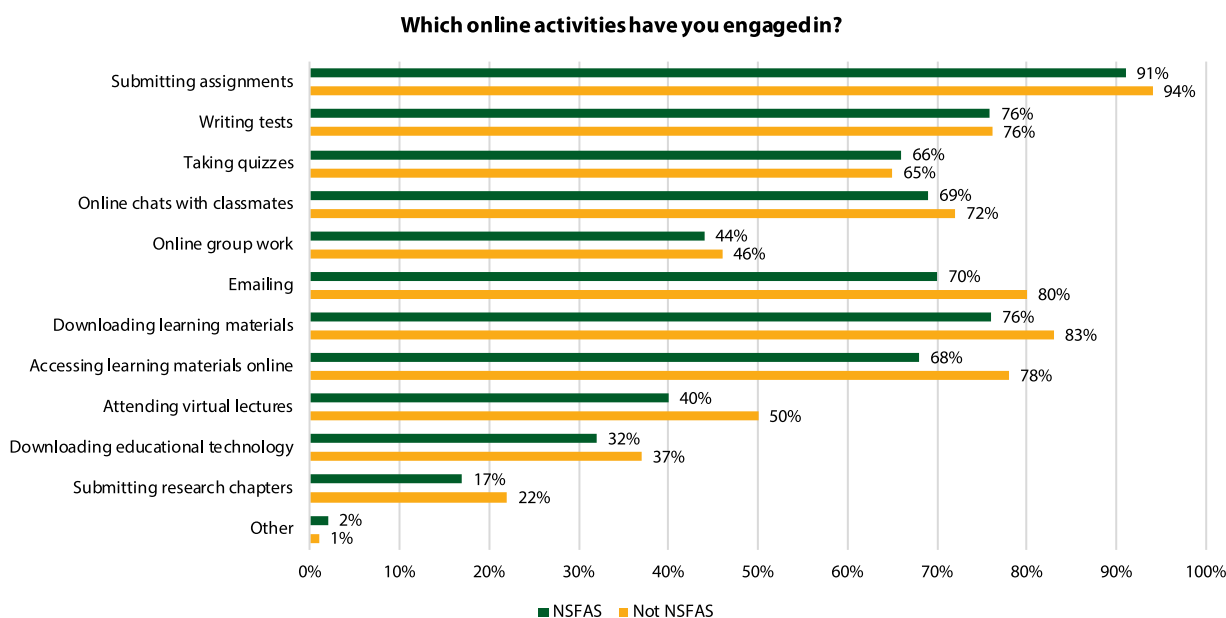
Figure 38 Online activities NSFAS students engaged in during remote learning

When asked how often students engaged in these online activities, just over half (52%) indicated daily engagement, 27% every second or third day, and 12% once a week (Figure 39). NSFAS students showed a similar pattern, with slightly less daily engagement (Figure 40).

How often have you been engaging in the online activities?
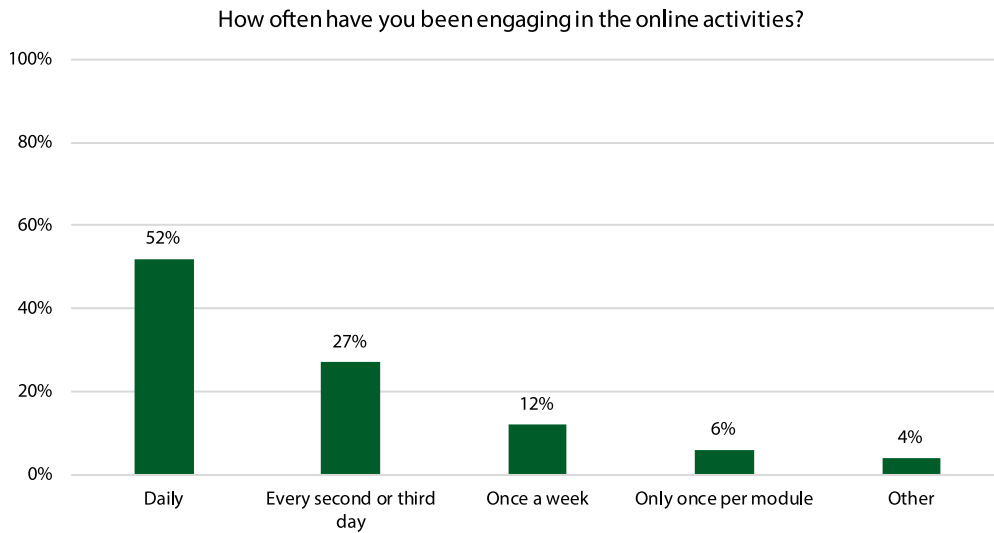
Figure 39 Frequency of online engagement

How often have you been engaging in the online activities?

■ NSFAS   ■ Not NSFAS
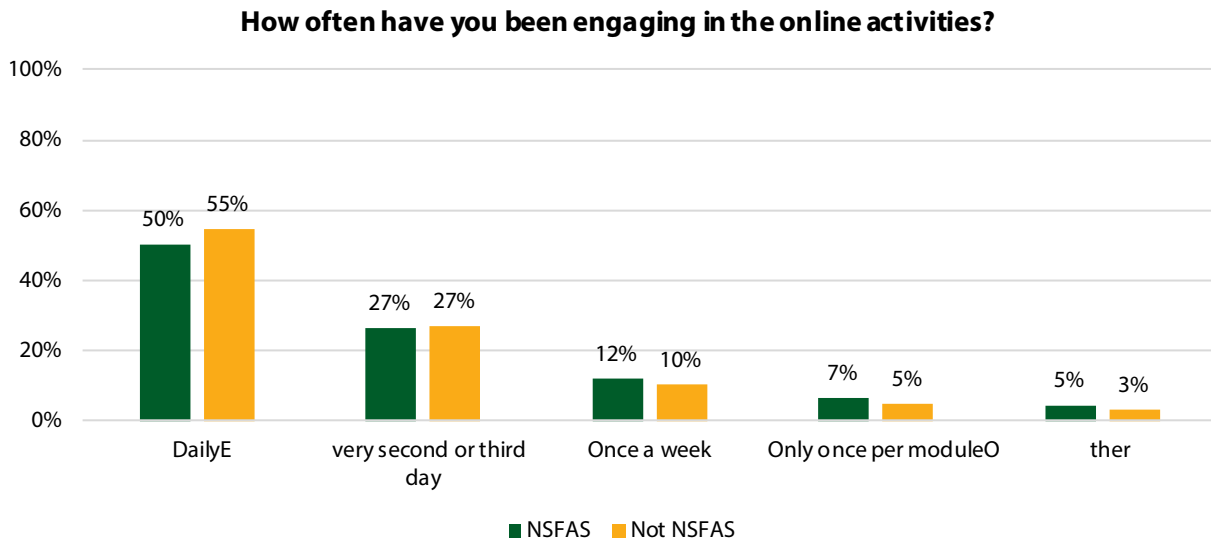
Figure 40 Frequency of NSFAS students' online engagement

The majority of respondents (38%) indicated that they used more than 6 GB of data while studying remotely, while 23% were unsure/did not keep track. 20% were not sure how much data they used because they used data or portals provided by their institutions (Figure 41). Very similar patterns of data use could be seen for NSFAS students, with slightly more students unsure of data use because they were making use of institutional data (Figure 42).

Approximately how much data have you used on the online activities?
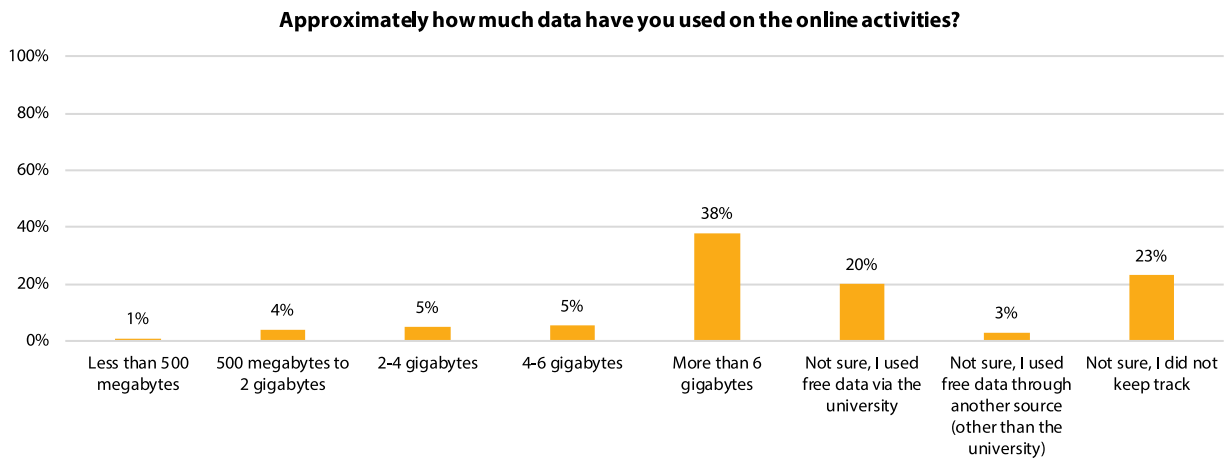
Figure 41 Amount of data students have been using during remote learning

Approximately how much data have you used on the online activities?

■ NSFAS ■ Not NSFAS
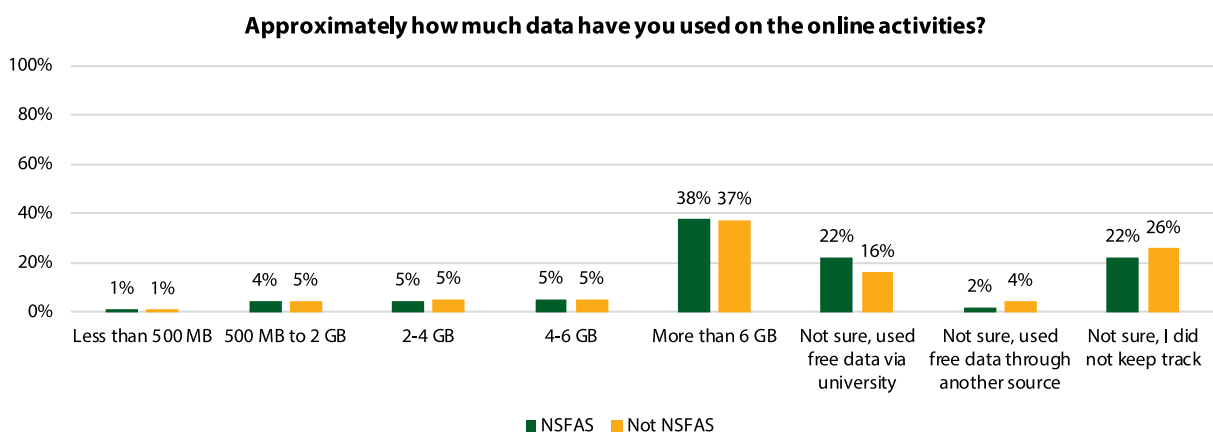
Figure 42 Amount of data NSFAS students have been using during remote learning

Figure 43 shows that around two-thirds of respondents accessed data by purchasing bundles from service providers, while almost half (46%) accessed data through their institutions. Almost a quarter of students resorted to using hotspots from other devices, while 16% had Wi-Fi or fibre at home. NSFAS students mainly accessed data by purchasing data bundles (65%) and almost half (48%) used institutional data. Much fewer NSFAS students had Wi-Fi at home or monthly contracts with service providers from which they could source data (Figure 44).

How did you access the data you used for the online activities?
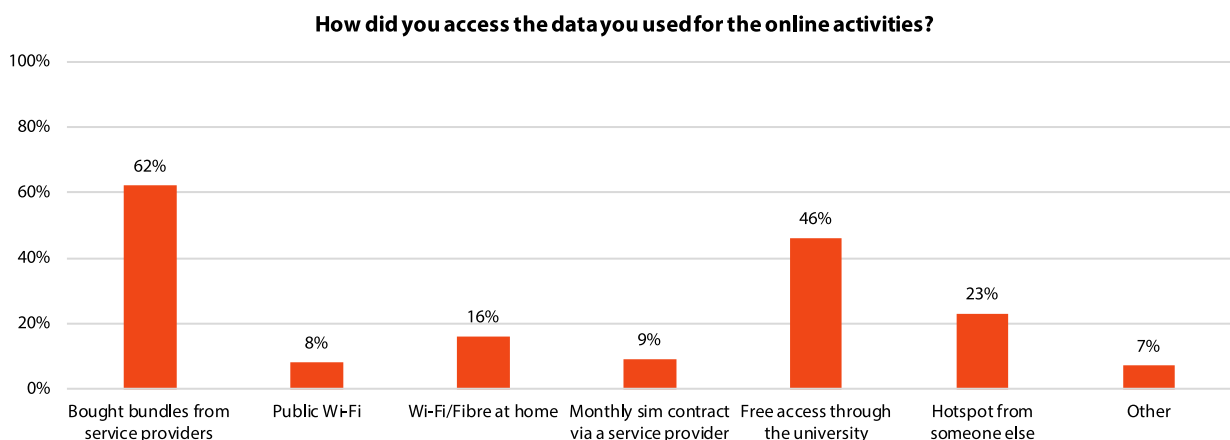
Figure 43 How students access data

How did you access the data you used for the online activities?
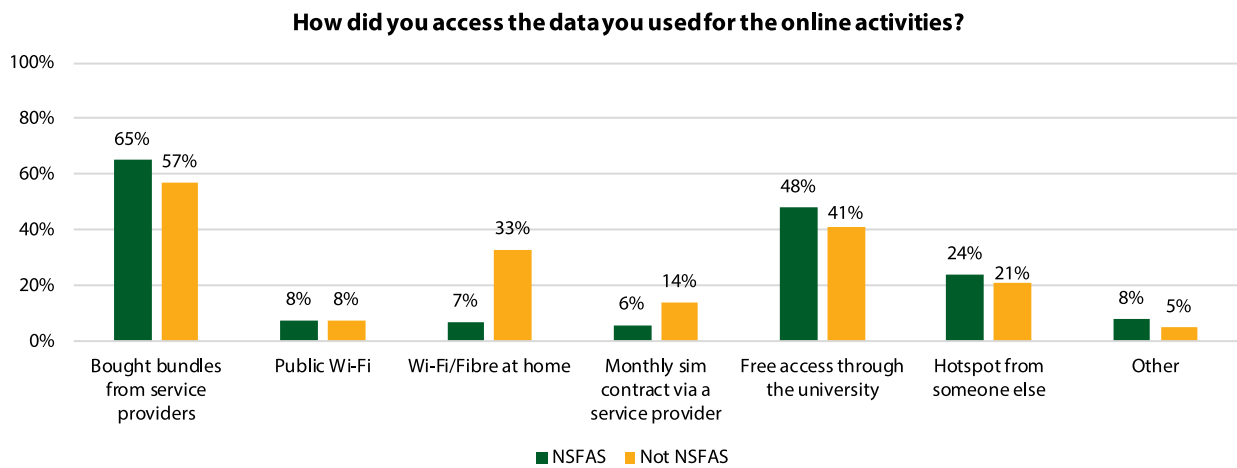
Figure 44 How NSFAS students access data

Only a quarter of the sample did not have to make a plan to get data. 38% of the sample had to make a plan to get some data, and 37% had to make plans to get any/all data they needed (Figure 45). Slightly more NSFAS students had to make a plan to obtain data, particularly for some of the data they needed (41%; Figure 46).

Did you have to make a plan to pay for the data you used for the online activities?
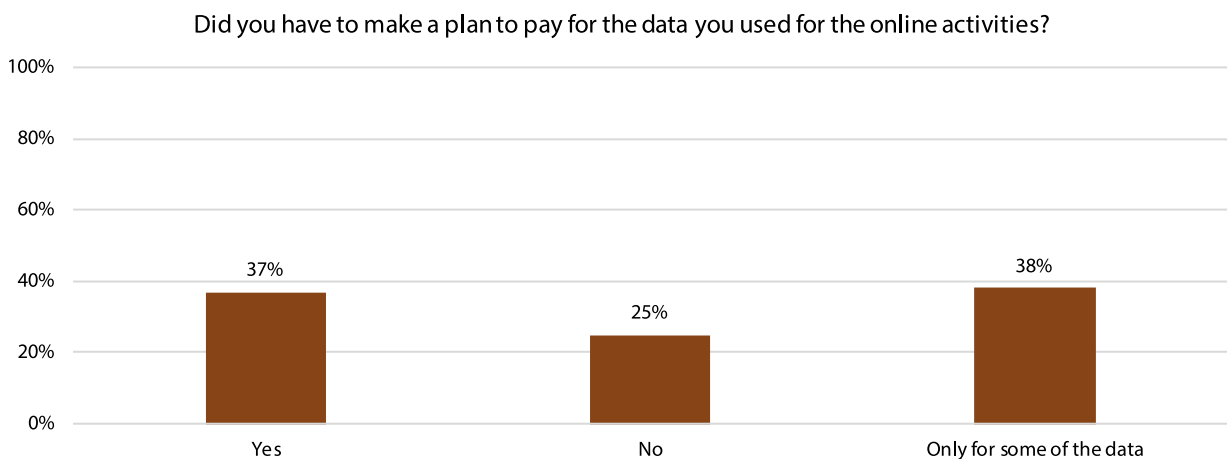
Figure 45 Making plans to obtain data

Did you have to make a plan to pay for the data you used for the online activities?
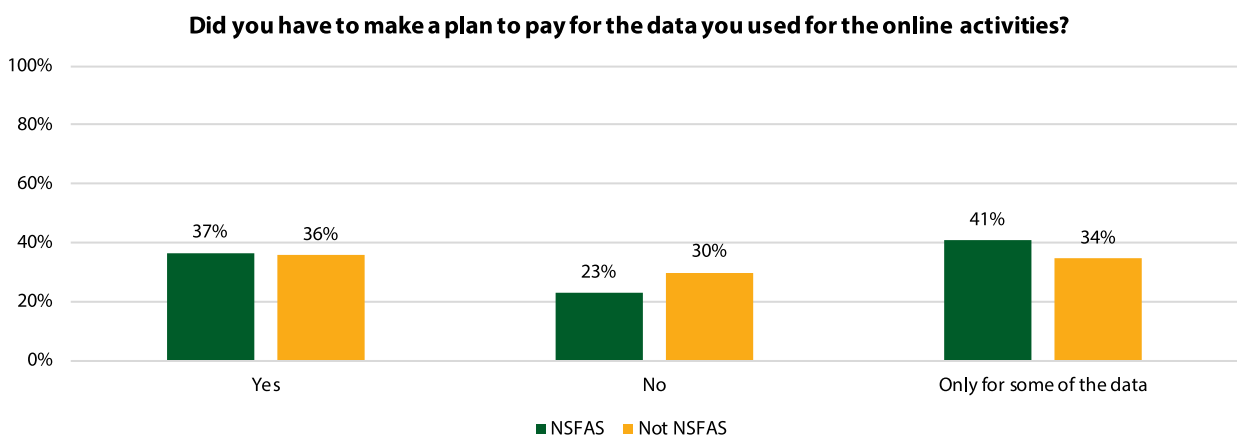
Figure 46 NSFAS students making plans to obtain data

When asked how they managed to pay for data, almost half of the larger sample (49%) indicated that they used their NSFAS allowance, while around 40% indicated that they used their own

money or money provided by family and friends respectively (Figure 47). Almost three quarters of NSFAS students (73%) paid for data with their allowance, while around a third depended on family/friends or paid for data with their own money, respectively. More students not receiving NSFAS funding had to depend on family/friends, loans, or themselves to purchase data (Figure 48).

How were you able to pay for the data you used?
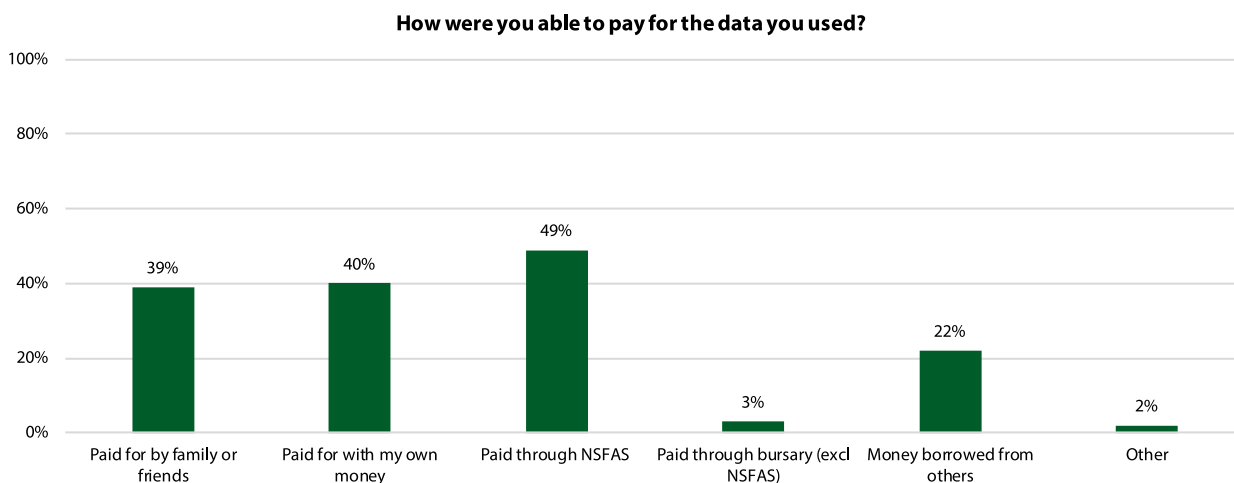
Figure 47 Payment options for data

How were you able to pay for the data you used?
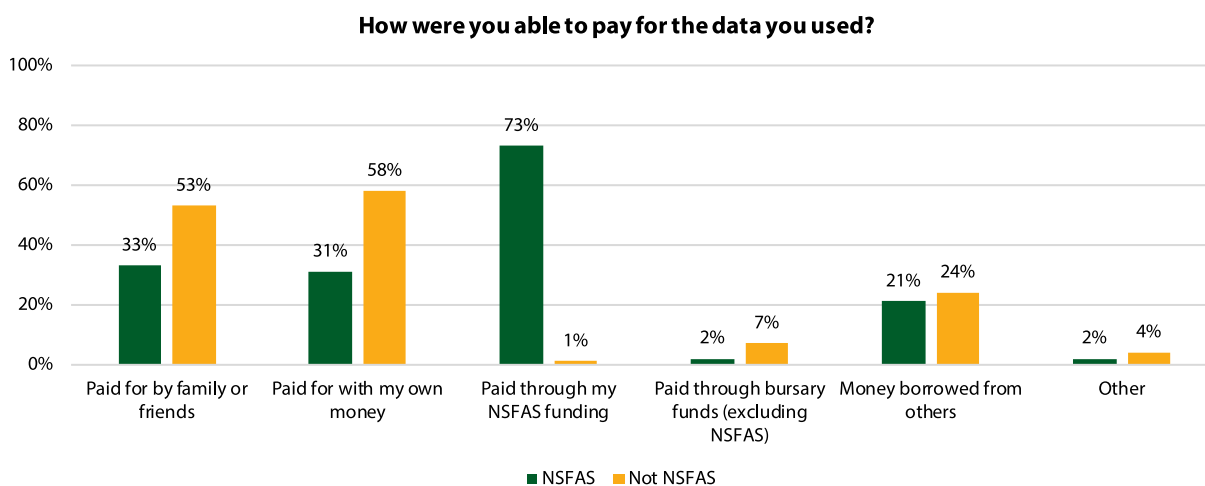
Figure 48 NSFAS students' payment options for data

Students were asked to reflect on the quality of their engagement with remote learning. Figure 49 shows that, in general, of the students who were engaging in assessments, over 70% felt that they were provided with clear instructions (those who responded with 'quite a bit' or 'very much'), and almost 60% felt that they received feedback on assignments. Further, the majority felt that the pace of activities was reasonable, activities were targeted at critical engagement with content, outcomes were clear, and relevant content was provided. While around 60% of NS-FAS students in general thought that content was clear and well organised, modules were well structured and paced, and that they received clear guidelines in the form of learning outcomes, all gave slightly lower scores for each of the items in comparison to non-NSFAS students (Figure 50).

In general, to what extent have the remote learning materials:

- Provided clear learning outcomes: 65%
- Given me access to relevant content: 69%
- Explained new content and concepts carefully: 60%
- Been well organised and sequenced: 61%
- Provided activities to engage critically: 61%
- Paced activities: 57%
- Provided clear instructions: 73%
- Required assignments: 86%
- Offered opportunity for feedback on assignment: 59%

Quite a bit/ Very much

Figure 49 Quality of remote teaching and learning

In general, to what extent have the remote learning materials:

- Provided clear learning outcomes: 61% / 70%
- Given me access to relevant content: 66% / 75%
- Explained new content and concepts carefully: 57% / 64%
- Been well organised and sequenced: 59% / 65%
- Provided activities to engage critically: 60% / 63%
- Paced activities: 56% / 58%
- Provided clear instructions: 71% / 75%
- Required assignments: 85% / 88%
- Offered opportunity for feedback on assignment: 58% / 59%

Quite a bit/Very much - NSFAS   Quite a bit/Very much - Not NSFAS

Figure 50 Quality of remote teaching and learning for NSFAS students

Figure 51 shows that students tended to get more actively engaged in modules that used technology. However, technology was not necessarily a substitute for class attendance, as over 70% said that they were never more likely to skip class when material was made available online. NSFAS student data showed similar patterns, with slightly fewer students getting more actively engaged in courses that used technology than those not funded by NSFAS (Figure 52).

- I get more actively engaged in modules/courses that use technology.: 45% / 55%
- I'm more likely to skip classes when material presented in class is made available online.: 71% / 29%

Often/ Very often true   Often/ Very often true
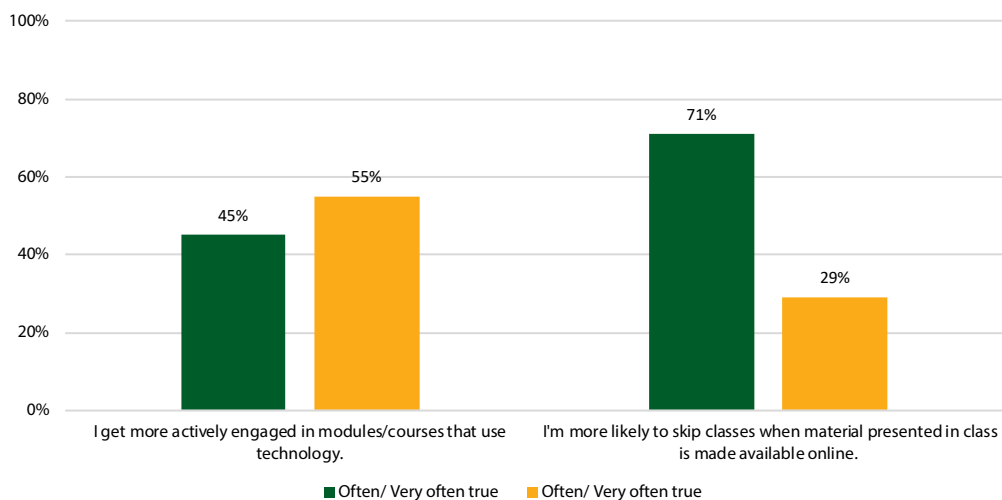
Figure 51 Sense of engagement with modules/courses that use technology
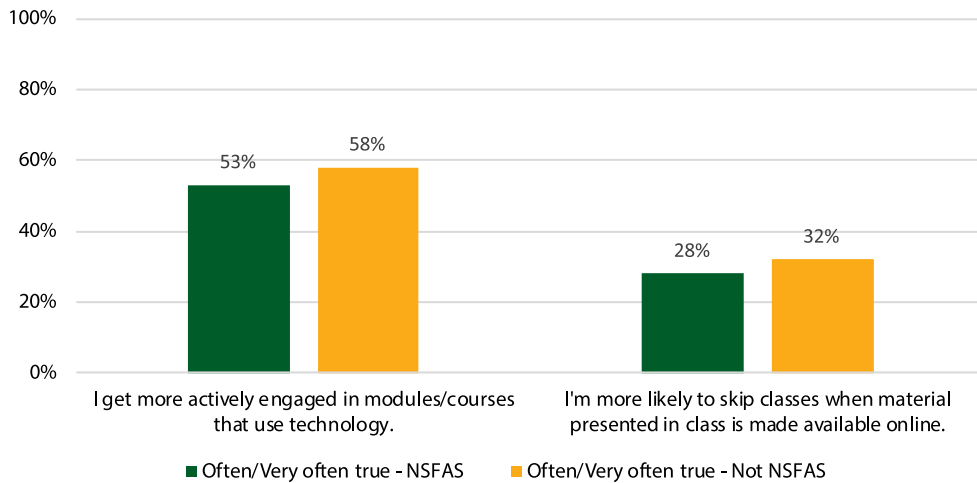
Figure 52 NSFAS students' sense of engagement with modules/courses that use technology

Regarding digital skills, students were asked whether they were well prepared to use the technology needed in their modules when they entered university. While 70% agreed that they were prepared, 30% were not (Figure 53). Around two thirds (68%) of NSFAS students said they felt prepared to use technology in their modules when they entered university. This was somewhat lower than those not funded by NSFAS (Figure 54).
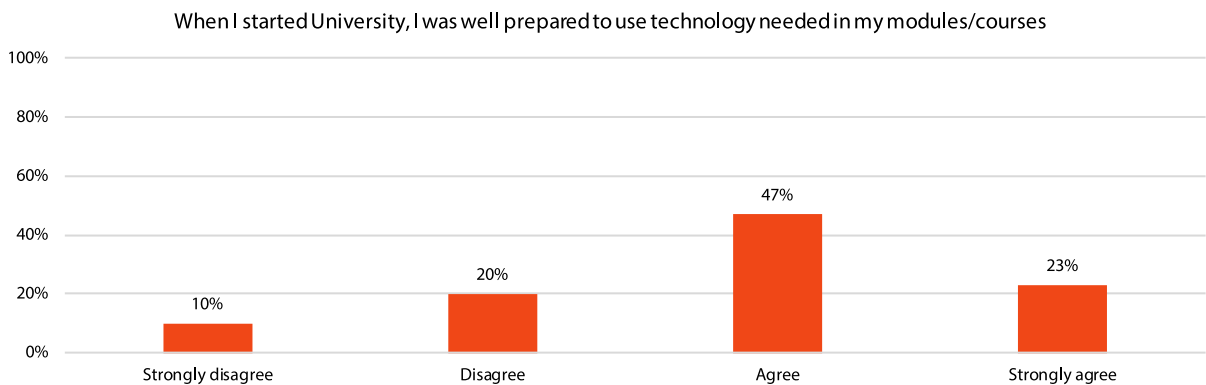
Figure 53 Preparedness to use technology
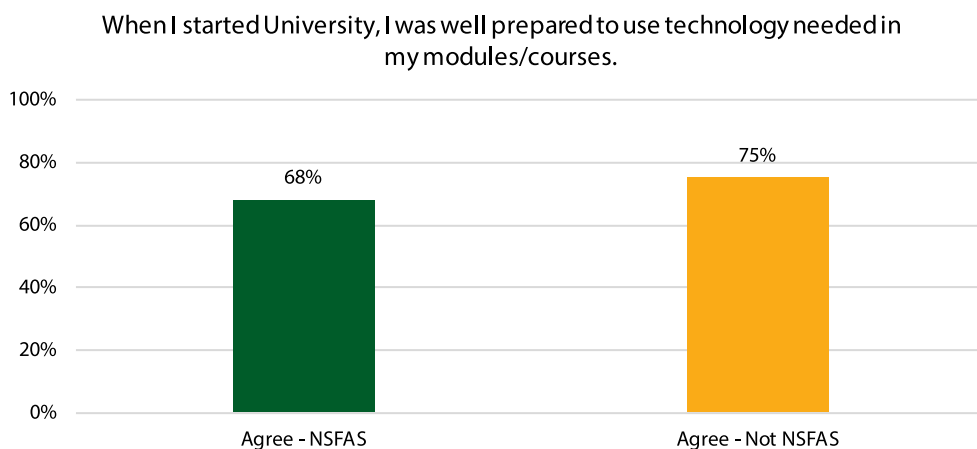
Figure 54 NSFAS students' preparedness to use technology

Finally, the SAULM survey asked students whether they would be more successful students if

they were better trained to use a range of technologies. Figure 55 shows that at least three quarters of students believed they would do better if they were better trained in basic computer skills, using a smartphone for academic purposes, using the university's LMS, and making effective use of library resources, among others. Figure 56 shows that NSFAS students strongly believed that they would have been more successful if they had been trained to engage with technology more effectively.

I could be a more successful student if I were better trained to use the following effectively:

Category	Agree	Disagree
My university's learning management system	82%	18%
E-books or e-textbooks	83%	17%
Recorded lectures	83%	17%
Social media as learning tool	53%	47%
Instant Messaging as learning tool	72%	28%
Basic computer skills like using a mouse, keyboard, etc.	76%	24%
My smartphone (for academic purposes)	74%	26%
Skills to work with software that support learning	85%	15%
Microsoft Office (e.g. Word, Excel, PowerPoint)	87%	13%
Email	81%	19%
Internet searches	85%	15%
Effectively making use of the library and its resources	89%	11%
Ethically engaging with academic material	88%	12%

Figure 55 Digital skills needs

I could be a more successful student if I were better trained to use the following effectively:

Category	Agree - NSFAS	Agree - Not NSFAS
My university's learning management system	85%	76%
E-books or e-textbooks	85%	80%
Recorded lectures	84%	79%
Social media as learning tool	54%	51%
Instant Messaging as learning tool	75%	68%
Basic computer skills like using a mouse, keyboard, etc.	80%	69%
My smartphone (for academic purposes)	76%	70%
Skills to work with software that support learning	86%	82%
Microsoft Office (e.g. Word, Excel, PowerPoint)	90%	83%
Email	84%	75%
Internet searches	88%	80%
Effectively making use of the library and its resources	90%	88%
Ethically engaging with academic material	89%	87%

Figure 56 NSFAS students' digital skills needs

1.5 Main challenges of technology and learning

Sections 1.5 and 1.6 summarise key themes that emerged from students' qualitative responses to their experiences of challenges and benefits of learning with technology. The quotes used to illustrate students' voices were drawn from all participating universities, however, possible information that could identify universities was removed or substituted with generic terms.

Figures 57 and 58 provide a bird's-eye view of the most common words and word-pairing students used to describe the challenges they face with learning and technology. Students mentioned the word "network" over 14,000 times in the qualitative question pertaining to challenges of learning with technology. Combined with synonyms, such as connectivity or connection,

the number of times students expressed frustrations with accessing the internet exceeds 20,000 mentions. The frequency word count showed in Figure 57 further highlights frustrations with data (over 8,000 mentions), time, loadshedding, devices, and other factors influencing their experiences negatively.
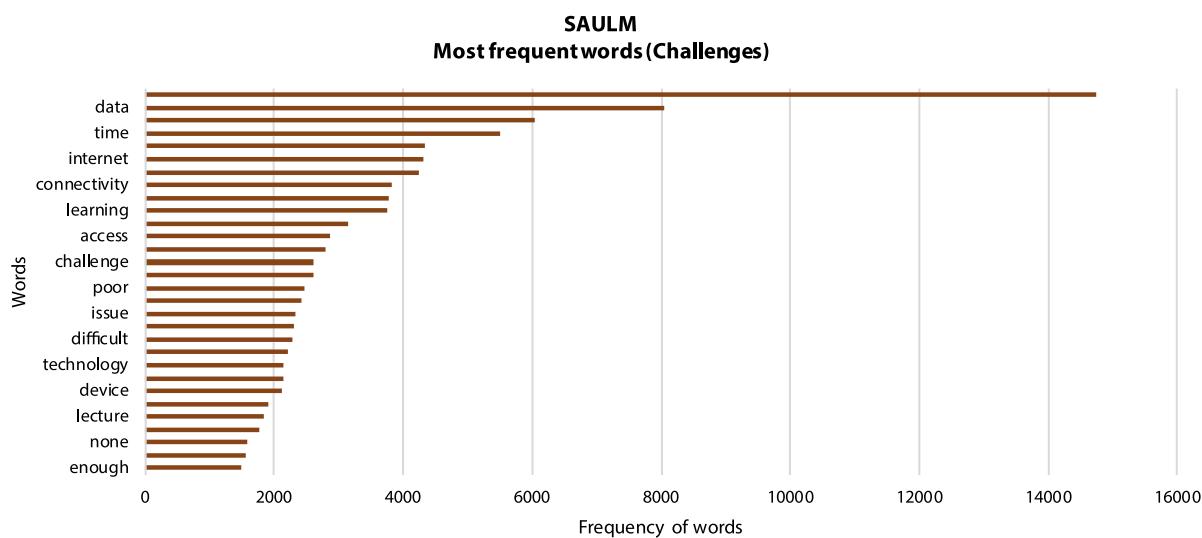
Figure 57 Frequency word count on challenges with technology

The bigram analysis shown in Figure 58, lists word-pairs most often used. Challenges with network, and intersections with data, loadshedding, and connection speed are most prominent. The cost and amount of data also feature strongly, as well as time management.
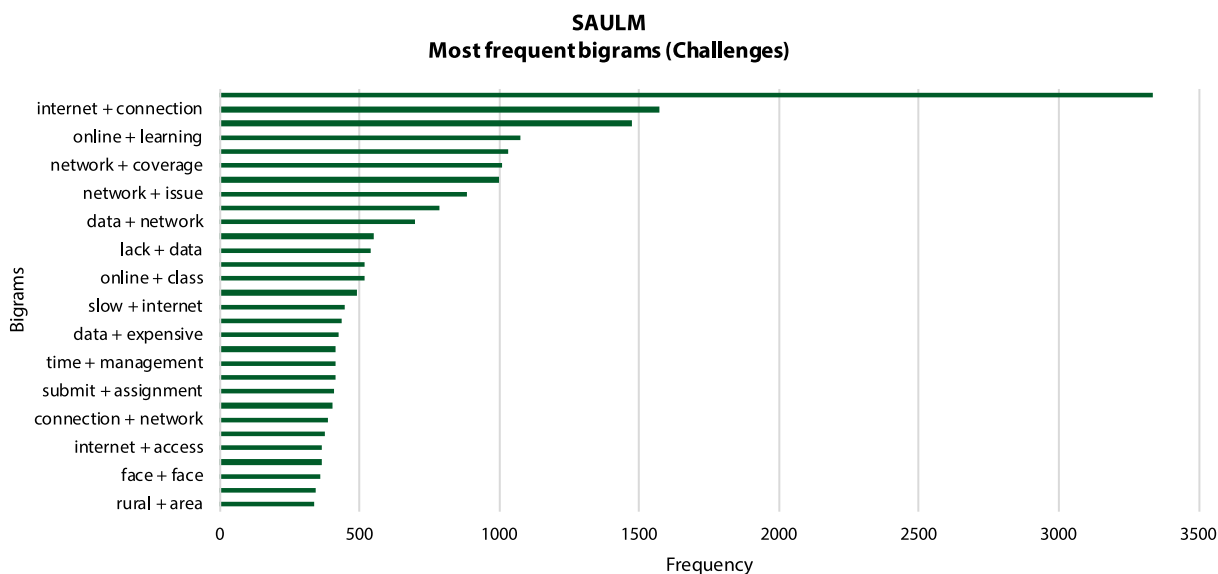
Figure 58 Most frequent bigrams of challenges

1.5.1 Network and infrastructure challenges

Poor network connectivity influences all aspects of remote learning, including downloading or searching for materials, engaging with synchronised learning, participating in discussions or submitting tests or assignments. For some, the absence of internet access or electricity in their areas meant that they did not have access to technology. For example, as two students indicated:

There is no internet so we can't access technology.

70% of the time we don't have electricity around my village.

For others, a lack of connectivity contributed to incomplete assessments, missing out on online classes, and going to extreme efforts to connect:

I missed some deadlines due to connectivity, could not complete some activities, assessment and assignments and failed 50% of my first semester modules.

Sometimes I could not get into a lesson because my device was giving me problems with the network. It would load forever until the class is done and past that.

In my area there connectivity is too low, in order to attend classes I have to climb mountains every time.

Even the provisioning of data (and in some cases devices) does not make up for poor infrastructure:

Poor network coverage. The area where I'm residing network connectivity is so bad that the data given by NSFAS becomes virtually useless. If the network provider can strengthen network coverage.

1.5.2 Data

The second-most frequently referenced challenge students encountered with learning and technology pertains to data. While some students were provided with data packages from different sources, others were given access to free educational websites through institutional arrangements with service providers. However, for many students the data provided is not enough, particularly when they have to engage in communication platforms. Data packages that double up on data between 12am and 5am also force students to study overnight, and data is very expensive. Some of the students' comments on data are listed here:

The data we are provided with does help to a certain extent but it doesn't last over two weeks and we end up having to stay up all day and all night consecutively to try and catch up using night data.

The daily data it's depleted so quickly, it's not enough to use it to participate in daily activities such as lectures on teams etc.

It takes up A LOT of data - which I simply can't afford - resulting that I fall behind with work. Mobile data provided by university being more at night than day when most learning activities take place during the day.

The 10 GB doesn't last me for a month. I end up buying expensive data to submit, stay connected and updated.

Network problem, loadshedding in rural areas and money to buy data since I'm not funded by NSFAS.

While students whose institutions provided them with free access to educational websites had more freedom to engage with their learning materials, the one disadvantage was that it limited

access to websites, for example, as one student noted:

Websites with relevant content can sometimes not be accessed.

1.5.3 Devices

Section 1.3 showed that 96% of students owned a device that they could use to study with. For the vast majority, this was a smartphone. The remaining 4% borrowed devices, particularly smartphones, from family and friends, and some resorted to using internet cafés to access devices. For the most part, students indicated that a computer (laptop or desktop) was not that difficult to use, however, up to 18% of students who used laptops for their studies found it difficult. Half (50%) of students who used smartphones for their studies also find it difficult.

The devices students had access to were frequently mentioned as challenges in their engagement with remote learning. Many had outdated devices that were slow or had limited memory capacity to store documents.

My smartphone is too old. It sometimes works slowly

My smartphone is not the latest version and some of the varsity work require cellphones with a huge ram.

My laptop was on life support, I could not afford to buy a new one, and sometimes it just switches off during virtual class.

Using a very old device, it is a disadvantage as it struggles with updated versions of programmes.

Others had devices that were inappropriate for studying, or did not support necessary software needed in some modules:

My smartphone is way too small to read from.

My laptop froze when I was busy with tests and assignment. I had two test and an assignment due in one day.

I don't have a laptop, which puts me at a disadvantage because my assignments require me to have a laptop to do programming, visual studio IDE.

It is very too difficult to juggle four modules using one device (smartphone). Most of the times, I have to write two tests on the same day and it gets quite nerve wracking as I need to make sure that my device is fully functioning and that it won't disappoint.

I'm doing a module that requires me to have a computer for coding, but I don't have money for a laptop so I'm really struggling.

Students making an effort to borrow devices were not always guaranteed access to these devices, and making use of internet cafés was expensive:

It was tough for me because I didn't have any gadget to use for my learning. I was asking a

friend to lend a laptop for me to study. Sometimes he refuses his laptop.

At most times I did not have connectivity during remote learning, it was difficult using my mother's phone as she also had some important interactions she had to make and the device storage would often be full and I could not save all vital resources.

Having no laptops or computers to use when you have to type an assignment is one of the most challenging experiences I am facing, sometimes you have to spend a lot of money in internet cafes just to type and print, scan and send assignments.

1.5.4 Skills and competencies

Many students commented on their lack of knowledge, skills and competencies to optimally make use of devices, the internet, and software. This caused some frustration and supported the digital skills needs noted by students in Figure 55 earlier. Some students' comments on skills challenges include:

Lack of knowledge about technology especially more advanced Word program skills and submitting assignments using a phone, also reading through a smartphone.

Knowing how to use various required apps to ensure success.

Not knowing how to use my smartphone properly with its display settings and thus causing me to fail a test.

Being unfamiliar with Microsoft office and not a fast typer.

Time management, I don't always complete my tests on time because of my typing speed. I was a slow typer and it was my first time using a laptop.

Lack of knowledge when it comes to using online resources.

I get confused with some stuff and the internet does not clear stuff I search for sometimes.

Technology and learning requires one to have basic knowledge on how to use laptops and how to access the internet of which I am still learning today. It's very challenging and frustrating at times when you don't know how to use technology.

1.5.5 Other technical difficulties

In addition to difficulties with devices, skills, data and network connectivity, some students also commented on other technical difficulties they experienced with institutions' LMS and library systems, frustrations with not being assisted with technical issues, or glitches in systems that influenced assessments.

During quizzes I did not have a password for Moodle, got a zero in first few quizzes. The school system Blackboard is not running up to date keeps on crashing, it can't handle the pressure of many students accessing it at once.

The [LMS] sometimes freezes while I am writing an online test and the timer does not stop

while the page is frozen.

Internet struggles as using data as a hotspot is not always the viable option as it cuts out and the [LMS] is not always the most reliable resource as it is constantly experiencing technical difficulties.

No being able to get access to Blackboard and not getting help from the university.

Lack of technical support from university administration staff.

Currently, I can't download Microsoft 365 because university did not provide licence, and I need it for EUP 1501. Moreover, the [LMS] is just a mix-up!

Accessing resources through the library was not easy because it redirected a lot and there was just a lot of processes involved. Sometimes it did not just take you directly to where you wanted to go.

Not being able to use the library and its resources online.

They are not reliable e.g. instruction says they are multiple attempts on your second attempt it says you have already written your test ....haybo!

1.5.6 Environment

For many students, the physical environment they found themselves in during the national lockdown was not conducive to studying. Many shared rooms with others, some lived in areas without basic infrastructure or surrounded by constant noise, and others had to contribute to households in different ways. With more than 80% of the sample being first-generation students, some noted that their families did not always understand the time and resources that went into studying. There was also a constant awareness of the effects of crime on people's lives.

At home there's no quiet place to do my work because I have a child that always wants to be with me.

I'm from a township and during the day there is more activities taking place. I also share a room with family members. To work effectively I should wait for them to sleep or go to the nearest hall.

When I have a class and my mom wants me to do something else. I'm the first person to go to varsity at home so they don't understand somethings.

Sometimes family does not understand that we have to study, they call us while in a middle of a test to go and fetch water and they wanted the money we use for bundles for us to buy food or pay something.

Studying at home is not working well for me I hardly have time to catch up with my school work, I have house chores to do during the day and I stay in small and crowded house and I share my bed room with my aunt and cousin, and I don't have privacy.

I am living in a one room house and I am surrounded with taverns and bars. It's been hard

with having people who are drinking and making noise every evening and night.

Poor network connection no good working place since at home we're overcrowded in a single room house while we're 8.

I struggle with time management. Especially now that I am the breadwinner while still being a full time student. My mom lost her income source because of this lockdown and I've needed to step up and get to grips with online learning all whilst earning an income.

I live in a squatter camp, without electricity and electronics.

Connectivity and the fear of theft since I'm in a township where gadgets can be stolen during the house break-ins.

When I was at home during first semester, I experienced loadshedding at my area, and then some thieves stole a transformer which affected our electricity to the point that we had to wait for electricians who came 2 weeks later, so it was bad.

Technology is unreliable and expensive. There is always the fear of it getting stolen.

1.5.7 Learning materials

Earlier, Figure 19 showed that during lockdown, students were accessing learning materials more independently, with less reliance on obtaining copies of learning material from lecturers or classmates, towards more downloads via the institutional LMS as well as other internet sources. Adapting to different learning materials, however, has caused frustration for some who struggled to access materials, or others who prefer hard copy materials and find it difficult to work digitally. While some students found that the wider range of learning materials created more work for them to synthesise, others noted that they found it challenging when lecturers only relied on a prescribed textbook or limited learning materials, particularly during remote learning. Finally, a large number of students relied on purchasing second-hand textbooks from other students. For the second semester, many of these students might have to purchase new textbooks because of less interaction with other students from different year groups who might sell their books. Here are some of the challenges related to learning materials highlighted by the respondents.

Accessing textbooks:

It is hard to get access to e-textbooks and e-books.

Internet books showing only a few chapters, not being able to download free textbooks.

Textbooks as a resource is very scarce. It would really help if the lecturers provided us with softcopies.

Engaging with alternative learning materials:

The overload of new resources coupled with new learning material is overwhelming and mentally draining.

Lectures recorded by lecturers take hours to get through. Having to write notes into our

books from 3 different sources (lecture slides, manuals and recorded lectures) take an insane amount of time.

My biggest problem in the law department was the fact that I had to do all the work on my own. No video lectures were provided. For my business modules, I received the most support with regards to access to a digital textbook, voiceover slides, etc.

Some lecturers don't explain the work properly and rely entirely on the textbook for our learning.

Not being able to understand slides because there were no recordings explaining then in detail, also not being part of the whole interaction vibe that you get if you are attending a lecture. It took me time to understand materials.

Paper format preference:

I do not have a printer and making notes and highlighting virtually takes more time that it would if I had a printed copy.

I struggle to learn via technological devices. I need my study material on paper.

I prefer hardcopy material, cannot always depend on technology. Hardcopy is always more engaging, with highlighting and making scribble notes on the course materials - it makes it more personal. Technology can also be distracting at times.

Purchasing textbooks for the second semester:

Having to buy new prescribed textbooks for 2nd semester which is currently still online while family salaries are being cut due to COVID-19 of those who help pay for my books.

Not accessing 2nd hand textbooks from fellow students for purchase.

Expensive online textbook material.

I don't have money to buy books and I'm not NSFAS funded.

1.5.8 Distractions

Some students shared the difficulties they had to stay focused while learning remotely. Some struggled with managing their own time, while others got distracted by social media or other entertainment platforms while working on their devices.

Due dates, failure to submit on time because of procrastination.

Getting distracted can occur via social media.

The thing with teach through technology is that sometimes I do not take the online learning seriously I get caught up with other things. Well this is simply because I am not used to this kind of learning it is a new thing.

Most of the time when studying with technology we sometimes forget about our work and focus on doing things that we did are not supposed to do while studying or learning for example when we are using a smartphone we end up being on WhatsApp chatting with friends.

I get distracted and end up steering away from my books and end up on for e.g. YouTube watching random entertainment videos.

I often find myself using my devices for watching Netflix and not working on them.

I learn well from human engagement and that's difficult to do online. It's easy for me to get distracted and scroll through social media or read random news. It's easy to procrastinate.

1.5.9 First-year students

First-year students had to move to remote learning after only a few weeks of exposure to the higher education environment. Many of them were not familiar with technology, using techno- logical devices, nor had they engaged much with institutional LMS systems. Similar to the larger sample noted in Figure 53, around a third of first-year students indicated that they were not pre- pared to engage with the technology used in their modules. Some first-year students' reflections are shared here:

I'm not much familiar with the technology because it's my first year and I'm from rural areas and I never got the chance to be taught on how to use blackboard and other devices.

First of all, as a first-year student I did not know how to use laptop, to access blackboard, and student email. And also to open Word and to type using different font styles.

Adapting to this new way of studying is a challenge, especially when you are clueless about the course you are doing (first-year student).

Don't know how plagiarism works and still don't know how to reference. This is a challenge for me because I am a first-year student.

I can use technology but when it comes to assignments, as a first-year, I don't know how they want us to structure our assignments which is one of the reasons I did not do so well in some of my modules.

As a 1st year student my biggest challenges came with not being fully equipped to make use of online learning platforms like Blackboard Microsoft Teams, Zoom etc.

My smartphone is limited, I cannot attend classes or engage with my fellow classmates. Freshman who were not funded by NSFAS or any bursary like me should be the recipients of Laptops because we are really struggling with Academics.

1.5.10 Practical work

Some students enrolled for courses or programmes with practical elements found it difficult to engage during remote learning. Similarly, a few students commented on difficulties with sub- jects requiring formulas, such as Physics or Mathematics.

When it came to the practical work side of it, it was difficult for me. As a first year I was still getting used to being taught about practical work side of my course, then came the pandemic.

I did my practical rotations online, for me that was a challenge. The practical rotation was more like a theory module that gave me a bit of problems.

I can't access laboratory.

My course is very practical (Theatre) and so I cannot have the same engagement as before.

1.5.11 Lecturers and lectures

Some respondents felt that certain lecturers did not understand what students were going through during remote learning in that they did not consider data and network challenges, did not provide adequate communication or information, and in some cases did not make any effort to transform teaching and learning to different platforms. Some students indicated that they still had not started with remote learning in some courses by August/September 2020.

Feeling that lecturers were not always empathetic enough:

There is so much work with limited time and sometimes lecturers do not understand the pressure we are under, when they want their work it's like it is the only module you're doing or have to give much attention to, they forget that there are other modules.

Lecturers aren't always understanding or reasonable in terms of the online classes. It uses more data than is provided, and it can sometimes be lengthy and unnecessary video meetings only benefit those with unlimited internet access.

Difficulties with synchronous learning e.g. live chats where other students struggle to get access because of Eskom, data, connection or platform issues.

Some tutorials I missed due to lack of data or poor connectivity and as they are not recorded it was not good. Scheduled tests that happen at a specific time are hard as I faced connectivity problems and some tests I had to submit without finishing.

Not receiving adequate information:

Lack of information supplied by lecturers and being given little time for working on assignments.

I do not get enough information on time.

Challenges have included no communication from departments or lecturers for 4 months. Then all of a sudden at the beginning of August we get bombarded with 1st and 2nd semester modules and work. It seems our lecturers know less technology than students.

Information was provided at the beginning of the module, with no guidance thereafter. There are no active workgroups set up and there are no regular lecturer feedbacks or interaction.

Questioning the quality of remote teaching and learning:

Two of my lecturers did not have online classes and just expected us to read and know the work without teaching us. They just posted quizzes with no explanation. They posted tests that were impossible to write without a laptop.

Lecturers are not concise. They send work and it is self-study, not "e-learning"; i.e. I am teaching myself, and not being taught through technology.

There is no standard for performance from lecturers. No two lecturers have adapted in the same way, and some have done so extremely poorly. It is rather difficult to keep up with all the different ways classes are handled.

Some students noted that lecturers' technological skills were not always up to par:

Lecturers seem reluctant to utilize technology and inexperienced in doing so.

Lecturers not fully understanding how to use the technology we are expected to know fully. Creates a communication barrier and confusion.

Some of my lecturers were struggling with Blackboard Collaborate and they couldn't record lectures. That was an issue because network in my area is very bad. Another lecturer used SharePoint and I don't know how to use it.

Lecturers not well trained to use the technology provided.

Some lecturers were not comfortable with the online learning format and it showed in the quality of the lecture content we received from them.

Not all of the lecturers are tech-savvy and/or cannot use technology to the best of its ability for students. They are used to traditional teaching methods and some of them have struggled with the migration online.

1.5.12 Clarity, assessment, and feedback

Some students were struggling to grasp content as it had been adapted for remote learning. For others, the focus on continuous assessment through quizzes, assignments and tests had created a situation where they were only focusing on meeting deadlines and not really learning anything:

Clarity on some of the content.

Being able to understand the content.

Sometimes there has been a lack of explanation or very vague explanation whereas when you are in a lecture you can ask your lecturer as you go through the work instead of now having to put your work on hold and wait to hear back from your lecturers.

Sometimes I struggle with understanding some of the requirements.

I don't understand some concepts and instructions because they are summarized.

I am chasing deadlines rather than grasping content.

Lecturers are over working us. I am often swamped with work. I only try a finish submissions but I'm not actually studying or learning anything.

Lecturers assume that because we are home they can pile up the work forgetting that we have responsibilities at home and their subject is not the o my one we are focussed on. There was a strong focus on submissions and less on creating a clear understanding.

Sometimes the work was just too much and the material was a bit difficult to understand. This led to chasing deadlines instead of actively participating with the course and learning. Multiple lecturers bombard us with assignments and tests that are often due for the same day, which makes it very difficult to cope.

For some students, a lack of feedback during uncertain times was a major challenge. For example:

It is has been difficult to engage in group assignments. The year has been largely unconventional and the complexities of it has been of paramount difficulty to adjust to, there's been much less feedback from assignments and general progress from lecturers.

Time management and zero feedback on tests and assignments, just received marks.

Lectures don't give enough feedback, so there is no way of knowing where to improve.

1.5.13 Communication and interactions

As a key link between students and the institution, lecturers play a vital role in mediating students' expectations and learning experiences. Some students experienced a lack of communication from lecturers, as well as frustrations with a general lack of interactive communication between students, lecturers and peers. Some also found it difficult to engage in online platforms with lecturers. A few students showed some empathy towards lecturers through recognising that they had to deal with many students' questions:

Lack of communication from lecturers:

We don't get clear communication from the offset from lecturers, I still haven't received any emails from lecturers for 3 modules second semester so I have no clue what the plans going forward is.

Some of the lecturers barely responded to concerns and would not reply to our messages. We would wait 2-3 days for a reply from them and some were very helpful.

Understanding that lecturers were also overwhelmed:

It is super difficult to communicate with your lectures because there are so many of us trying to reach out to them.

One of the biggest challenges was getting hold of lectures via email because they must reply to so many.

Lack of instant feedback from lecturers:

Not being able to get instant feedback from lecturers or help from other students when you are uncertain about something or don't understand.

The communication barrier between the students and the lecturers; the lag time creates problems when students seek urgent answers and some lecturers are so busy that they never even respond to students' questions.

Sometimes I have a question when I am watching the lecture videos, which are just short questions but need to be answered on the spot, so I can't ask them, so sometimes I have to send an email to send a simple short question, which is kind of a drag.

Difficulties associated with digital communication:

It is sometimes hard to ask questions to the lecturer online.

It is very discouraging sometimes. Sometimes you need an in-person discussion to understand something. It is easy to feel disconnected from your peers and lecturer.

As a student having to communicate with lecturers via email or WhatsApp it has happened more than one time that a lecturer understands a question wrong or interprets the message incorrectly and gets upset with us.

Lack of interaction with lecturers and peers:

Communication between lecturers and student. Harder to do group work.
Lack of engagement with lecturers and classmates.

Tutorials were incredibly difficult to do online because of the lack of interaction and the ability to discuss the course content with classmates and tutors.

Not interactive with peers and lecturer. It can get very lonely and feel somewhat demotivating.

1.5.14 Mental health

References to mental health were found throughout students' contributions on the challenges they were experiencing with technology and learning. Some of these include:

Another challenge is that my mental health did not allow me to cope with the workload.

Uncertainty whether you submitted at the right place. And also the technical issues contributes to anxiety, stress and depression especially when a particular assignment/quiz is about to be due.

Motivation, depression.

Having to deal with mental health issues as well as completing and submitting assignments and actively engaging in online work. Another problem was having the data run out.

No there's nothing beneficial for me the issues I'm experienced almost triggered my depression again and somehow I feel like giving up on everything it's not conducive for my mental health.

1.5.15 Universal access

A few students commented on how some challenges associated with remote learning were exacerbated by their disabilities:

No assistive device,I'm deaf 😭 also network problems I can't walk properly to seek where I can assess good network the University dint seem to care about my needs so I got zero from lecturers, sad.

I am vision impaired and even with my glasses I struggle to read on any digital screen, thus having my workbook and textbook in front of me is much easier.

I am unable to focus or read as much as I would normally do compared to using printed material. I have had to print out all my material which is expensive. When I asked for printed materials I had to be specific about the disorder I have.

1.5.16 Intersections

Many students experienced intersecting challenges that tended to have a compounding negative effect:

Lack of a study space and study mates. Cold environment, sometimes hunger and lack of electricity. Anxiety over illness, safety and pressure to submit school work at an alarming pace.

The challenges were: adapting to online learning, time management, not being able to engage with lecturers and classmates, anxiety about being alone and not having to be surrounded with supporting classmates.

Things have been so bad. Firstly I live in rural area where there is a very high issue of network. Secondly there is the issue of loadshedding and there is no generator in my house. Another thing is that, here at home we are crowded in a very small space.

Data Shortage, misunderstanding of how to find some assignments, tests, etc. Lack of Word, Excel Skills. Distractions at home.

1.6 Main benefits of technology and learning

Time as a benefit of learning with technology was mentioned over 9,000 times (Figure 59). The word-pairing bigram in Figure 60 shows that the convenience of flexible access, working at their own pace, having enough time and saving time, were all frequently mentioned benefits of learning with technology.

**SAULM
Most frequent words (Benefits)**
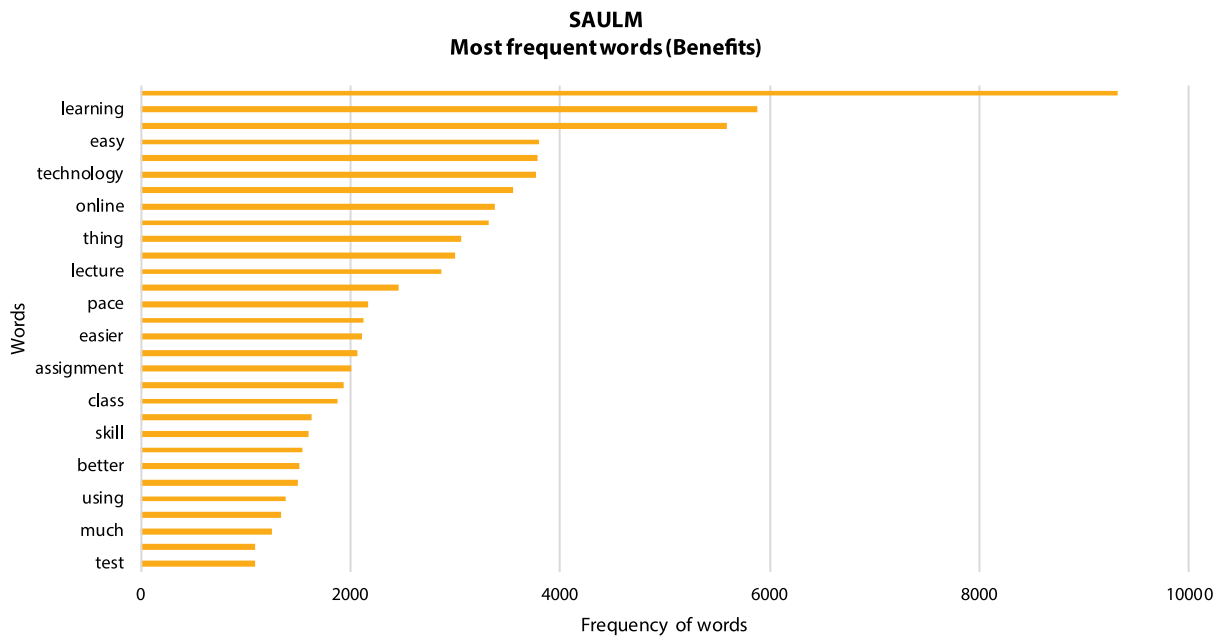
Figure 59 Word frequency of benefits

**SAULM
Most frequent bigrams (Benefits)**
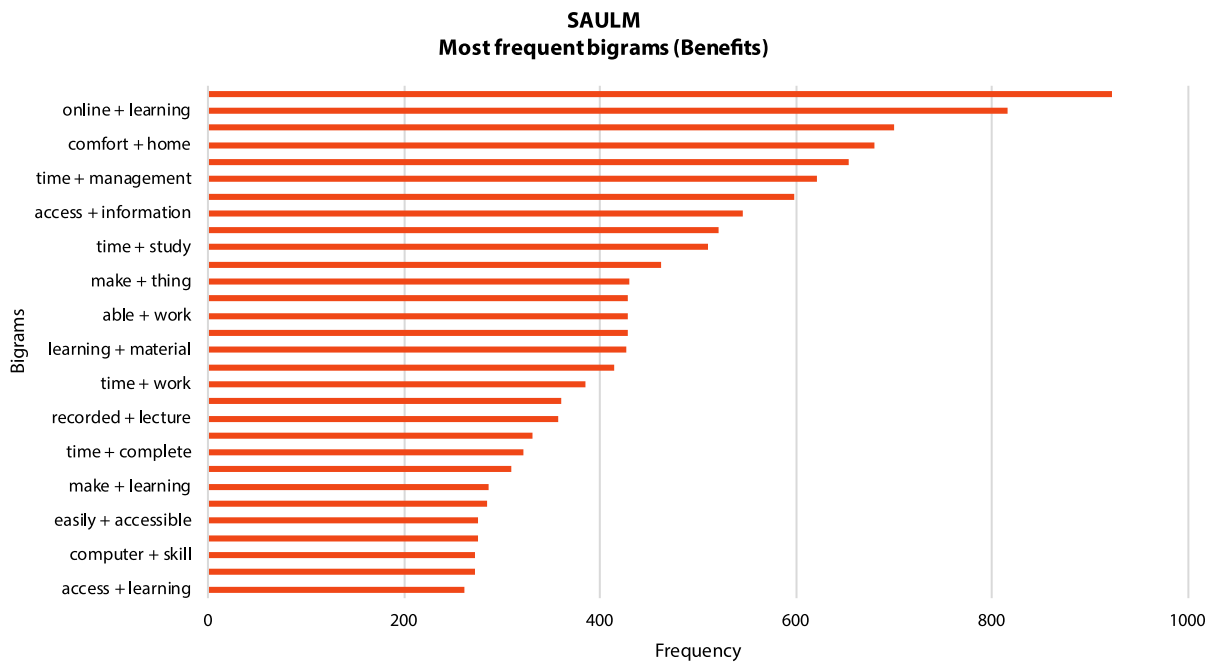
Figure 60 Bigram analysis of benefits

1.6.1 Motivation and adaptation

For many, if not most students, moving to some form of remote learning during the national lockdown was disruptive in many ways. Some had little experience with technology, while others felt unmotivated and struggled with managing their time at home. While the transition was difficult, many students commented on how they had been adapting to remote learning:

Firstly I am not used to technology a lot has been tough for me to complete and for the learning it been very hard for me to adapt in with to the platforms have been used to access learning.

This whole online learning thing was too overwhelming at first I couldn't keep up with all the online discussions times. At first I felt that there was too much work, it was just deadline after deadline not much learning, but eventually I got used to it.

At first it was tough to access Microsoft office and get used to study online but now I'm excelling.

At first it was difficult to adjust to this but as time goes on I am enjoying it.

I have issues being regularly motivated (for example, sticking to my study schedule or plans when I'm feeling mentally or emotionally drained) or physically able (for example, having a quiet space) to attend online classes/meetings and submit assignments.

Online test writing is very challenging. Not used to it yet.

I am very unmotivated and keep in procrastinating. My family also asks me to do chores around this house constantly which prevent me from doing my online classes.

My time management skills lacked at first. When I made the necessary adjustments, the quality of my learning improved significantly.

During the first semester there wasn't any specific challenges, I was able to adapt quickly and enjoyed the online learning because it was presented in a manner that was easy to understand.

I'm a different person now I manage my time, never tired, always prepared for class and I save the money I use to travel, I'm not forced to wake up early and rush to campus on a hungry stomach due to being late I usually skip breakfast now I eat accordingly.

I'm getting more comfortable using electronic resources rather than hard copies, which of course is better for the environment and saves a lot of printing cost.

1.6.2 Connectivity, data and devices

As shown earlier, the greatest challenges students experienced with remote learning were network connectivity, and access to adequate data and appropriate devices. Students' experiences noted here confirm the impact these necessities have on the quality of remote learning:

I do not experience any challenges, I am very privileged to have technology at home and be able to use Wi-Fi at home.

I use my own Wi-Fi, so no challenges really. The university has equipped us with workshops regarding online learning. Very supportive. Some students will struggle if they are not adept to using technology.

With good network connection I find it easy to complete my tests online and it is quite easy to submit assignments.

Well, the use of the app called Global protect has assisted me a lot, I could save my data when connected to Global protect VPN, I could also connect securely to the internet and download

important files from the school.

The university developed us to be technology wise and we had data and used the zero rated app which is VPN so that we can be able to access blackboard even if we don't have data.

VPN saved money in buying data.
Using a smartphone is easy and quick and you get to do your work anywhere as long as there is a data.

1.6.3 Literacy modules

A few students commented on technology/academic literacy modules they had completed during their first year of study that helped to prepare them for remote learning:

I don't really have any because the first year computer literacy module helped me and prepared me for this.

At this point I would say nothing, because at [my university] from first year you get enrolled for an Academic Literacy Module, which has a component of learning about technological stuff, and you learn about the computer itself and that also software development.

At first I was struggling with using my computer but as time went on I managed to figure most of the things out and the computer literacy module I am doing at school helped me out with understanding the required simple concepts.

I'm glad that in my first year we had courses dedicated to learning about the university's online platforms so I was familiar with them.

1.6.4 Developing skills, competencies and knowledge

Many students had not engaged with devices or technology in an academic way prior to 2020. While many struggled to adapt to the new way of learning, several commented on skills, knowledge and competencies they had developed during this time. These range from technical skills and knowledge to soft skills, such as problem solving or critical thinking. Some also commented on how the experiences they went through helped to equip them with technological skills they would probably need in the workplace or for future learning opportunities. Some students' comments are shared here:

Improved understanding in using technology. I've learned a lot about my electronic devices, which makes my life easier.

I'm now able to access information on different platforms, and sharing big files with my mates through different platforms and online videos has played a role for us to understand, it's unlike a physical contact class room.

Create creative thinking, to think out of a box.

It broadens my knowledge.

Gives the chance to learn soft skills. It also familiarises students to the digital world.

Learning new skills, new stuff. For example; Zoom meetings, Microsoft Teams. Wow we learnt a lot.

I've had time to strengthen a lot of skills like time management and computer skills. I definitely love this.

Communication and I have learnt skills on educational tools that are useful for my course through online tutorial videos.

We get to think more creatively, and strengthening my problem solving skills.

Typing, browsing and digital presentation skills are enhanced.

Improved my research skills, self-directed studying, independence and discipline, improved my writing skills and made me more digitally/ technologically informed.

I've now learnt how to type fast assignments and how to use Microsoft (Word, PowerPoint, Excel etc.)

Skills and more knowledge to use devices and how to research without plagiarizing.

Get to know how [the LMS] works.

It teaches you to be more responsible as well as managing your time well, it also makes you aware of other learning apps that you did not know as a result you explore more about technology.

Learnt a life skill to learn to adapt to unforeseen situations and also be organised.

Improvement of my computer literacy skills and use of online learning material.

Knowing how to submit assignments on blackboard online and checking my grades. Sending email to my fellow students and have group chat.

Technological skills as a graduate attribute:

Learning how to use and incorporate more technology in my learning for future purposes. Preparing for the industry.

Getting used to use to technology benefits me because the world is changing lots of technology is being used so I'm happy for this opportunity.

That knowing how to use technology is important as the world is entering into the fourth industrial revolution and technology is an important part to know as it will serve at your advantage.

I get to have access to some information beyond my prescribed curriculum that I can later use as a professional.

It exposed me to a world of possibilities, showing me that online learning is indeed possible.

The world is evolving rapidly and so is technology and knowing how to work with technology gives you a better start for the future.

I see it as opportunity for one to get to working with laptops and get used to its programs because computer literacy is one of the requirements in some job post.

It helps me to fit in with the way things are probably going to work, in some industries, in the future.

Being taught new ways of using technology. We have been continuously told about the fourth industrial revolution, and all of this is being put into play because we are learning, writing tests and conducting researches online.

1.6.5 Better understanding of content

Some students commented that they had gained a better understanding of their academic work during remote learning. This was because of revisiting lecture recordings, spending more and better quality time on academic work, participating in a variety of active learning techniques, and being more focused when engaging with work.

I have more time understanding the content, especially when listening to the recordings again.

I'm gaining more knowledge am not sure how and why but I'm learning a lot more than attending lecturers.

I can actually learn with retention instead of the normal "cram before a test" method. This is due to a more fluid structure which allows me to organize my time better.

Content is easy to access in one central location, it is well organized and allows more time to understand the content independently.

I appreciate that online learning gave me the opportunity to engage with the content on a higher level.

Online learning has helped me study and understand the work. On a normal basis we experience so much pressure that all we do is scan the work and pass and not actually engaging and understanding the work.

A lot more work is being done, physical assignments, tasks, work which can contribute to a better understanding.

I did the work at my own time and got to understand more of the work I never understood.

1.6.6 Better academic performance

Some students noted that they were performing better academically during remote learning. They provided some explanations they thought might have contributed to their success in the quotes below. These include being more focused on academic work, having more time to prepare for and during assessments, having supportive peers and lecturers, feeling less anxious

writing tests from home, and that continuous assessment helps them understand work better.

My pass rate has increased immensely. It's easier to concentrate in class and the lectures are much clearer and more engaging.

I've learned to study harder without depending on my lecturer and my marks have improved. Achieving good marks because you have enough time to solve the questions (tests).

I get more engaged in the work and achieve better marks than attending a lecture as I get distracted in lectures. At home I have my own space as well as peace and quiet to focus and do my work.

I get to pass my modules with good marks because I get help from my fellow students and lecturers are always there to help.

My marks have improved a lot because I had more time to prepare and did not feel the same amount of pressure as when I had to go to class and write tests.

It gives us more time to study and they giving us more chances when coming to tests and quizzes so most of us who are dedicated are passing with distinctions.

I was able to improve my performance in some of my modules because we are sometimes given extra time to read and understand the test and assignment and also given enough time to complete them.

I managed to pass modules that I found difficult on previous year.

Yes the classes are very convenient, the lecturers are very skilful in executing classes online. Gives me the opportunity to study harder as there is more time available to do so. My marks have increased by using the online class system.

My marks are much higher than when I was on campus.

I am a lot more relaxed about learning. If I feel I want an off day, I take it, and I find my marks higher with continuous assessments.

I got to do assignments and quizzes which helped me to improve my marks.

1.6.7 Assessments and feedback

While many students commented that assessments were challenging because of time constraints, anxieties over the reliability of technology and network connections, or having too many assessments, several also commented on the benefits of remote learning assessments. These include leniency in the time given to submit assessments, having multiple attempts to recognise and rectify mistakes, feeling that frequent assessments help with learning and understanding work, open book tests move learning towards understanding and away from rote learning, and getting faster feedback on assessments. Here are some of what the students said regarding assessments and feedback:

Also when writing test you given multiple attempts on the test which helps see your mis-

takes and correct them.

I am not panicking when writing tests because there's no invigilator that's walking around and making me nervous instead I am in my own space and I'm more relaxed to read the question carefully with understanding without being disturbed.

The duration that we are given to complete and submit online assignments is fair.

Assignments rather than rote testing is a bonus.

Less pressure when writing tests and reduces the costs like printing.

By doing more online quizzes we interact with the work more and ultimately have less to study for the tests and exams.

I submit quicker and get feedback back quicker.

There is a second chance when doing your assignments and tests.

While I'm writing a test then I forgot something I can check my textbook.

It's works for me, if feedback from lectures is done regularly.

Being able to work at my own pace. Being tested more often through online quizzes, as opposed to the few unmarked homework assignments we usually received before remote learning.

I had enough time to actually go through the work and understand it before doing a quiz, in the past we didn't have enough time to prepare for a quiz resulting in just doing it because it is due soon.

Lecturers were somewhat more open to extend deadlines because of the technology.

I got more time to do the quizzes and could refer back to my textbook for help.

I am given enough time to prepare for tests and quizzes and multiple chances to complete exercises.

Receiving feedback from some of the course I did helped me to be able to know where and how I can improve.

Quick feedback on quizzes.

The fact that we have to hand in assignments and do quizzes almost every day helped me because it kept me accountable and kept me on track with my studies.

That everything happens instantly. I don't need to wait after submitting an assignment, it will process the assignment immediately.

Online exams really reduced my anxiety, I got better results due to writing online and some

of my lecturers were really supportive and interactive during online exams.

1.6.8 Engagement with lecturers and peers

Many students commented that engaging with lecturers, tutors and fellow classmates on different platforms was an important support structure for remote learning. Some lecturers created groups on instant messaging platforms, others hosted discussion forums on LMS or other communication platforms. Many students also felt more comfortable engaging with their lecturers via electronic platforms. Some comments include:

Consultations are an email away.

Engaging more with the lectures.

Lecturers were always quick to respond and help, sometimes it was easier to communicate with the lecturers virtually.

We are able to interact in an effective way and work together along with the lectures.

Increased interaction with lecturers which is more helpful as it extends to after normal operational hours....it really isn't like when we were attending on campus....the time isn't limited, well considering of course that one cannot be inappropriate.

Being able to interact with my lecturers via emails because I couldn't do so before.

It gave me opportunity to engage with lecturers more through WhatsApp groups.

We interact with lectures more than in person.

Engaging with lecturers and fellow students was easier than I thought I had much fun learning online I learned a lot.

Engaging with my SI facilitators through WhatsApp to be able to help.

The lecturers are always available online if I have a question. My class mates and I communicate more to solve problems.

We are able to interact with the lecturers with no fear of the other students laughing at you. I can communicate better with my lectures without fear of judgement.

Easy to communicate with lecturers and fellow students.

Communicating skills has been developing, since most of the time I have to talk and share ideas with my class mates and all other peers who are doing same course with me. Ability to collaborate with other people has been so amazing so far.

It's easier to gain new information and get help from fellow students through technology e.g. communication with fellow students via WhatsApp, etc.

Better communication and help from fellow students before tests. Students on the WhatsApp

groups usually sort out any faults assignments together and quickly.

I interact more on learning groups on blackboard more than I did in an actual class. I can ask without being nervous.

1.6.9 Appreciating lecturers and institutional support

Many students recognised the efforts of their lecturers and institutions to help them adjust to remote learning and portrayed a sense of appreciation in comments such as the following:

University lectures have had to engage with their own content in new ways.

Lecturers are very helpful they give up recordings and videos to make our work even more easy and interesting.

Lectures are engaging with us via WhatsApp group chats and if we don't understand certain things. The lecture explains via a voice note and then everything becomes clear.

Our lecturers went all out to help where was needed.

Lecturers try to be there for us to explain everything but online learning is difficult.

Most lecturers go the extra mile to compensate for the lack of contact sessions.

I saw how much effort my lectures put in to help us do our best. They understood circumstances and helped us through this difficult year. They also had to learn new ways to teach online.

The lecturers are engaging, they are constantly checking in, they try and come up with solutions that are beneficial not only for me and them but for the cause as well.

Lectures were much shorter. Workload decreased.

It has allowed me to work at my own pace. Lecturers at [my institution] assist with problems and are very understanding. Online learning has allowed me to complete my 2nd year successfully whilst I have been safe at home. Technology has been extremely helpful.

It can be easily accessible and understandable sometimes. The lectures now give us enough time to finish and submit our work. They are also very considerate when it comes to students problems with online learning.

Comments recognising institutional efforts:

[My institution] has provided most students with learning material from laptops to study worksheets and are delivered to all students that are struggling during this time. We are all grateful for the support, to our lectures who are helping us to catch up.

My safety is a priority right now and the university has made sure I am well aware of that. Academic year is not wasted.

I was able to complete my semester during this pandemic.

Lecturers where always available to assist with problems of online learning and how to access sites. Thank you for everything [my institution].

The [institution] have helped students throughout. Providing Data, Webinars, free access to resources, providing constant almost instant responses to emails.

Saves a lot of time. Saves costs. Very convenient in that one can study anywhere anytime, with own pace. I Applaud DHET in helping us with data during this difficult times. If it was not costs issues it must be considered as a subsidy to needy students.

1.6.10 Convenience

One of the most frequently cited benefits of learning with technology is the convenience of it. This includes saving time and money on travelling to campus, being able to engage with learning material from anywhere, having all resources in one place, being able to access resources and submit assessments quite quickly, and learning at their own pace. Some of the comments students made on the convenience of studying remotely are listed here:

Able to learn from anywhere. Information is readily available.

I have access to all of my resources at any given time.

If I skipped a class I could go back to it at my own time compared to physical classes that if you miss then you can't get back ever again. There was a lot of information provided i.e. study guides, lecture slides, videos, recordings and etc.

Technology makes things easier and quick, for an example instead of going to the library for a book you can now download it via the internet.

I don't have back to back classes as I did on campus, I can now eat healthy because those classes used to starve me to death from 8 am to 5 pm.

I can be able to work and make time to learn at my own pace, lecture videos available online anytime and being on WhatsApp group chat with my lecturer in order to personally ask questions.

You don't need large books nor go to a library.

I feel it's easier as I usually have to take 4 busses to get to university and back home. Sometimes I had to do that to attend just one lecture where as they info or the lecture could have been live streamed and I could have actively taken part from home.

I can work at my own pace. I am in the comfort of my own home. The technology makes learning easier.

Don't have to travel excessively for only 1 class, if that were the case for the day. The lecturer can ensure that everyone receives the course work as there is a social platform for any Q&A and content to download for studies.

It teaches on new things and makes work a lot easier, it also help in minimizing paper based work and emphasize more on digital work.

My own routine regarding work. More time spent with me family because I could finish assignments as soon as I got them.

One had to submit using soft copies which made life easy than having to stand in long ques just to print out an assignment.

Faster ways of submitting assignments without having to print them.

It allows me to interact with other students and, with almost everything being online, I don't need to go to some campus facilities which can be very time consuming.

It's very convenient, I can attend lectures in the comfort of my res room and I basically don't have a reason to miss any lecture, being whether I woke up late, water problems, transport problems etc.

Not having to attend physical lectures. Not being at the mercy of robbers.

I can plan, manage and do my assignments fast, anywhere at any time effectively. There is a lot of flexibility. Also, anything I am curious to know about is a click away.

It allowed me to be more independent with my learning and allowed me to do the work at my pace and in a way that suites me. By being remote it has saved my family a lot of money as traveling to university every day was very expensive (about R100 a day).

Saving a lot money which would've been spent on rent, food and transport and putting it aside for tuition fees.

1.6.11 Engagement with learning materials

As shown earlier, the move to remote learning caused less reliance on receiving learning materials directly from lecturers and an increase in downloading materials. The variety of learning materials also expanded, with lecturers sharing voice-over presentations, recordings of lectures, and other additional notes, links or assessments. Students seem to find the variety of learning materials helpful, and the ability to revisit, pause or forward lectures was referenced many times as a valuable tool to aid learning and understanding. In addition, many students commented on making use of external/additional resources to clarify concepts or get different perspectives on topics. Some of their comments reflecting engagement with learning materials are listed here:

Variety of learning materials and being able to revisit lectures:

Having different formats of content helps solidify the concepts more deeply (e.g. textbook, lecture video recordings, notes, external videos).

Variety of resources to select from, convenient, portable, lectures can recorded and repeated later.

Videos that were uploaded, I could pause and play back whenever I don't understand the

lecturer unlike when I am in the lecture hall.

You can repeat a lecture if there is a concept you do not understand. You can also work at your own time.

It helps to increase your attention with regard to lectures and you can stop the lecture if you don't understand something to research it more.

I find having recordings of the lectures saved on my device very helpful, as I can re-watch it and email the lecturer with any questions I may have concerning certain areas of work.

Having voice over slides, recorded virtual lectures from teams that I can access anytime and multiple times.

For some odd reason lectures are more engaged with you thus you receive better content from them than in a tutorial of 300+ students in a building.

I can re-watch a lecture until I understand it completely, in person you only have one chance. There is a lot more access to learning materials and it is extremely beneficial to have recorded lectures which I can refer back to and re-watch if something is unclear.

I can get much more out of watching lecture videos than actual lectures. Because I can pause and make notes. In class I sometimes have to write so fast because they don't put notes online that I actually can't follow what is being said.

I can easily access notes, previous tests & assignments and other study material and if there is something I still don't understand I can go back and re-watch the video that was captured in the previous virtual class before proceeding with the next.

Ease of accessing materials:

Downloading required books.

I don't have to buy textbooks.

Access to learning materials (can be saved on phone instead of printing).

Notes and other stuff that you need to study is available online and you don't have to print them out.

You have access to your study materials at all times and don't have to carry around a lot of books.

Everything is arranged in one device instead of multiple books.

Supplementing learning materials with online resources:

Being able to search for more examples and videos i.e. YouTube, to get clarity on a certain subject that requires a deeper understanding. Sometimes videos help because you hear someone explaining something and that makes the information easier to grasp.

I use khan Academy for some modules, to practice different problems from what was provided by the lecturer.

YouTube allows you to watch a better understanding of a module with different lectures and style of teaching.

Content can be found anywhere online, Google search, YouTube can also be a great advantage when used for online learning.

E-learning class videos and YouTube links help in giving extra information if one cannot fully understand the class videos.

It's proven to be slightly better than lectures since most of the information I get about a module is outside the classroom and outside the school even.

Access to the internet for more illustration on my models and the ability to form group chats for studying with my fellow classmates.

It gives more information using different methods such as audio recordings, videos, pictures, which helps my mind to have a clear understanding about the topic.

Easy access to learning material. Additional resources available via the internet e.g. YouTube videos.

If I do not understand a concept I can watch a video over again until I do or I can find more videos to help me. Technology has also provided us with more learning materials and information.

1.6.12 Becoming independent/self-directed learners

Many students' comments on the benefits of learning with technology reflect a sense of pride or accomplishment. The comments below testify to students taking responsibility for their own learning and developing a new identity as a self-directed learner.

Independence, some sort of "maturity."

I've discovered that you should take more responsibility and give more attention in order to succeed in online learning.

You get to use your brain more than you get spoon-fed.

Opened my mind.

It introduced me to the new world of learning and teaching.

Learning new ways of organising my work and study timetable.

Being able to study on my own and evaluating my strengths and weaknesses on my own.

You learn more different things. Able to study and come up with solutions of your own with-

out being spoon-fed.

Learning to be more responsible and accountable.

It makes one more independent and responsible for your own learning. It forces you to engage in academic work because you have to teach yourself. It also teaches you time management and how to prioritize better.

It has taught me to work independently and develop character in my field of study.

I learned to be independent and brave enough to study new content by myself.

I have had to think out of the box, figure somethings out for myself, seek help from others were needed.

My self-learning has improved immensely. I created different styles to learn and that is the part that makes learning so nice for me. My technology skills just keep improving.

More knowledge and also to be self-determined and independent as to not depend on other people to do things for you and also I had a lot of time to prepare myself for my studies.

I've learned new study skills and independent studying.

Being very independent, figuring things out for myself & being about to get them, it's a big achievement.

I learned how to better manage my own studies and prioritize my work, more since I became a self-directed learner. I grew more responsible especially for my own work and I took charge of my work. I learned how to use Microsoft word better.

The ability to effectively manage my time, and push myself beyond limits and not solely depend on my lecturer. Responsibility in a nutshell.

Learned to become more disciplined and independent.

I engage more with lecturers and classmates than before online learning, I became more attentive and observant to what was being taught, I was able to teach myself how to use some of the programs. Before I used to ask for assistance.

Section 2: Synthesis of findings and implications for policy and practice

This section synthesises the findings of the SAULM survey and provides some evidence-based reflections on how the sector could conceptualise a "new normal" for policy and practice.

2.1 Learning materials

In terms of prescribed textbooks, a concern was raised early in 2020 that a decline in textbook purchases could be as a result of NSFAS policy changes and that students might not be spending allocated allowances on relevant purposes. The SAULM data shows that while most students' modules still use prescribed textbooks as a main source of disciplinary knowledge, around 13% of students' modules do not use prescribed textbooks. This number is higher for distance students at 16%. Of the 87% of students' modules that do have prescribed textbooks, around a quarter (26.5%) do not buy any of these books. Students also do not buy all their required textbooks as the majority buy 1-2 books, while they have more modules with prescribed textbooks. NSFAS students buy more books than non-NSFAS funded students, but almost half of them buy second-hand books from fellow students.

In general, of those who buy textbooks, 68% buy them new and 59% buy them second-hand. For the first semester, only 8% bought soft copies of textbooks. Through the qualitative data it seems that many students are open to soft copies of textbooks, primarily because of the convenience of having all resources on a device, as opposed to carrying around large books. Many commented, however, that they still preferred using hard copies, that they struggled to access soft copies of their textbooks online or via their institutional libraries, that they were limited to a few chapters of soft copies, or that they struggled to find textbooks online. Of those who did not buy textbooks, 68% downloaded some of their books via open access, file share or pirated copies. The main reason students gave why they chose not to buy textbooks was the cost.

Beyond textbooks, prior to lockdown and remote learning, the majority of students relied on their lecturers to provide study material in class or through the LMS. During remote learning, as would be expected, there was a stronger reliance on the LMS for learning materials and less reliance on getting materials directly from lecturers, or even from peers. Distance students show a stronger reliance on study guides and use less alternative resources. A similar pattern is seen in that they relied less on getting learning materials directly from lecturers during remote learning, however, where contact students showed an increase in LMS use, distance students did not show such a big increase. Distance students did show higher levels of downloading resources from websites beyond institutional LMS systems. For all groups, it seems as if a wider range of learning materials was made available (more lecturer notes, voice-over slides, videos of lectures, more access to previous tests, etc.), as well as introducing learning materials on different platforms (e.g. using YouTube, using open source resources, such as Khan Academy, or engaging with materials with others via Microsoft Teams, Blackboard Collaborate, or WhatsApp).

The qualitative data shed some light on students' engagement with learning materials. While some found the increased variety of learning materials intimidating and difficult to synthesise, many commented on the value of asynchronous, self-paced learning, where a recording can be paused and alternative sources could be consulted to clarify concepts, before continuing with

the session. The variety of learning materials, as well as the increased time spent on self-mastering content, also generally seems to have increased students' understanding of the work.

From the data it is clear that the necessitated changes students and institutions have had to make have resulted in significant shifts in students' experiences and understanding of how they could learn in different ways.

2.2 Access to devices, data and connectivity

Engagement with learning materials and broader teaching and learning during remote learning requires access to a reliable internet source, data, and an appropriate device. These three factors were the cause of most frustrations students shared regarding learning with technology. While almost all students had access to at least one device, the qualitative responses show that devices are often outdated, or are not appropriate tools for studying. For example, at least half of the SAULM sample had to engage in remote learning with their cellphones, which often have small screens, lack space to download and save materials, or do not support software packages necessary for certain modules. In addition, while around 60% of the broader sample owns laptops, almost 20% fewer NSFAS students own laptops. Those who do not own devices themselves, primarily rely on borrowing devices from family members or friends, which does not always imply guaranteed access when needed, nor does it provide space to download or store materials.

Many institutions, as well as DHET, contributed data packages or arranged to have certain educational websites zero-rated during remote learning. Some students recognised these efforts, but ultimately the data was not enough, particularly considering the amount of data needed for engagements in online classes or other platforms, downloading learning materials such as videos or voice-over slides, or engaging with learning materials/content on websites external from the LMS. Around two-thirds of respondents accessed data by purchasing bundles from service providers, while almost half (46%) accessed data through their institutions. Almost a quarter of students resorted to using hotspots from other devices, while 16% has Wi-Fi or fibre at home. Considerably more postgraduate research students own their own laptops (86%) and make use of their own Wi-Fi or fibre connection at home (40%). Students from traditional universities showed a similar pattern, with around a quarter saying that they had Wi-Fi or fibre connections at home, compared to only 7% of students from universities of technology.

2.3 Engagement with educational technology

Students engaged in a range of online activities during remote learning, many of which on a daily basis. These activities include submitting assignments, downloading learning materials, writing online tests and quizzes, using email as a communication channel, and accessing learning materials online. The majority of the sample (70%) also engaged with classmates through online chats, however, only around half engaged in formal online group work. In general, the student respondents were relatively satisfied with the quality of teaching and learning they received during remote learning, with over 70% indicating that they were provided with clear instructions, while around 60% felt that the activities and content were paced, content was well structured, and that they received adequate feedback on assignments.

While the majority (70%) of students felt that they were prepared to use the technology needed in their modules when they entered university, many believed that they would be more successful students if they were better trained to use a range of technologies, including basic computer skills, using a smartphone for academic purposes, using the university's LMS, and making effec-

tive use of library resources, among others. Regarding other groups, although distance students and postgraduate research students were more experienced in using technology, both groups indicated a need for better digital skills training.

NSFAS students engaged less with online activities than non-NSFAS funded students during remote learning. NSFAS students also found it slightly more difficult to use desktops, laptops and smartphones compared to other students, and strongly believed that they would have been more successful if they had been trained to engage with technology more effectively. Further, NSFAS students relied more on cellphones for learning, lived in environments with less connectivity and less quiet places to study from, found it more difficult to use devices effectively, felt less prepared to use technology when they entered university, engaged in less online activities during remote learning, and identified more skills needs than students not funded by NSFAS. The digital divide for these students is very real.

2.4 The challenges and benefits of technology and learning

I had to learn to adapt to the epic transition from high school to tertiary level and I had to get used to a new way of learning, and when this pandemic presented itself, I had to adapt to a e-learning , data prices, loadshedding and network issues.

There is no doubt that the sudden transition to remote learning (or the sudden cessation of academic activities for some) was challenging for all students, academic staff, as well as support staff. Everyone had to adapt to a new teaching and learning environment. For many students, particularly those living in areas with poor network connectivity, those who did not have appropriate devices for studying, or those who did not have an adequate supply of data, skills or knowledge to optimally engage with learning materials, the transition to remote learning was even more challenging. Others listed additional challenges, such as struggles with mental health, disability support, not being able to participate in practical aspects of study programmes, or even challenges with managing their own timetables as compounding factors. Many shared frustrations with lecturers and their modules, making them feel isolated, disconnected and overwhelmed.

That said, when asked to list the benefits of learning with technology, many students reflected on how they had adapted, and even grown to appreciate aspects of remote learning. Students' voices reflected a sense of accomplishment in that they had mastered things they never thought they would, or developed skills they did not have. Becoming more independent and self-directed in their learning were key developmental achievements for many. The comment below from a student reminds us that things cannot go back to how they were after they were exposed to new ways of engaging with learning materials, their peers and lecturers, and could save time and money by not travelling to campus every day.

It is a much easier way to approach education. We live within the internet therefore this experience has introduced us to the new norm.

2.5 Students are resilient and institutions are responsive

A key insight from the SAULM data is that South African students have tremendous resilience and agency. The quotations of how students have adapted under huge pressures to continue their learning testify to this. In the process of adapting to a necessary change, students have gained self-reliance and a better understanding of how they can learn. The data also showed how responsive institutions can be and how much they can adapt to support students and find

new ways for the academic project to succeed. Some of the questions raised by student responses are: How has the pandemic enriched our understanding of staff and students' contexts? How has it confronted our assumptions of what students can and cannot do? How have our assumptions around academics' ability to adopt and adapt to technology and new teaching and learning approaches changed?

2.6 Conceptualising a new normal for teaching and learning: Considerations for policy and practice

It is difficult to imagine that teaching and learning will return to how things were before the pandemic. The move to remote learning has unveiled the possibilities of embracing technology in higher education. Its contribution to pedagogy, as well as preparing graduates who are equipped to engage with a technological world cannot be underestimated. The SAULM data allows us to reflect on what a possible "new normal" could look like:

2.6.1 Basic learning infrastructure is critical

Device, data and network access are critical enablers for South African teaching and learning. Without basic learning infrastructure, it is impossible to benefit from technology. Currently, the digital divide keeps those who do not have access to these resources from engaging optimally with their studies. While contact students would not be expected to continue remote learning indefinitely, a more flexible learning environment that incorporates more technology in teaching and learning is expected to become the norm. For this to be successful, students, and particularly students from lower socio-economic circumstances, need to be supported to access basic learning infrastructure.

2.6.2 Digital skills development needs to be prioritised at institutional and national level.

While there has been recognition at national level to prioritise digital skills development, DHET might need to lead initiatives or partnering between ministries to optimise synergy in this respect. Too many students commented that they did not know how to type and/or are not able to use their devices effectively due to a lack of skills and understanding of software and operating systems. In addition, if a wider range of learning materials should become the norm, students need to be taught how to conduct effective searches, how to differentiate between academic and non-academic knowledge, and how to ethically engage with academic content. All institutions should include digital skills development, intended to develop information and media literacy linked to academic literacy and graduate attributes to develop citizens for a 21st century world. In addition to students, academic staff need to be trained in incorporating educational technology into their pedagogical approaches. At the very least, institutions would need to invest in learning designers to assist in weaving in and optimising technology in disciplines.

2.6.3 Flexible content delivery platform(s)

The development of a flexible content delivery platform(s) that would allow the use of textbooks, institutionally developed materials, as well as Open Education Resources (OERs) across a range of devices is essential. A flexible platform must be built on universal design principles to enable universal access, especially for students with disabilities. A flexible platform needs to allow integration with various learning management systems (LMS). This platform will create more equitable access for NSFAS as well as "missing middle" students. By integrating these resources in a flexible platform system, students will be able to learn in different ways, at different times and in

different spaces. Rather than putting in place individual flexible content platform solutions, institutions should consider a collective bargaining approach or shared services solution that could be collaboratively led by USAf, the DHET as well as the CHE to create more cost-effective access to learning materials.

2.6.4 Enhancing financial aid

The data shows that NSFAS students are able to buy devices and data more than students that do not have this support. Therefore existing support for these students needs to continue. In addition, innovative solutions for the "missing middle" will be vital to ensuring that all students can participate in a new learning and teaching environment. The above-mentioned recommendations will require an alignment of NSFAS policy that provides more guidance on how the learning materials allowance is structured to include a laptop, an annual data bundle, and access to flexible learning materials platform. The reconceptualisation has the potential to enable universal access and improve students' chances of success and better quality education for the most vulnerable students. By providing greater guidance, the DHET will alleviate the extremely difficult choices students are forced to make between the "tools" they need to succeed and meeting the socio-economic challenges created by poverty. It is also important to mention that the effectiveness and efficiency measures instituted at NSFAS should be strengthened. Student responses show that delays in NSFAS payment had a negative impact on their ability to participate in learning.

2.6.5 Using the crises to reimagine learning and teaching

The results point to an opportunity to reimagine learning and teaching. As the analysis of challenges and benefits of learning with technology shows, there is an opportunity not to waste the crisis of the pandemic. Students and institutions have learned valuable lessons of the benefits a more technology-infused learning and teaching environment can bring. By embracing technology, institutions can create learning and teaching environments that are more flexible and adaptable to the disruptions (socio-economic, political and technological) that characterise the 21st century workplace and world. Embracing technology offers an opportunity for academics to redefine their role as teachers, for institutions to be more responsive and for student to become self-reliant and independent learners. Some of the questions raised by students' responses are: Do we owe it to our students to challenge them more? Should a new teaching and learning environment not raise the bar in terms of challenging students to push themselves and so realise their potential with the appropriate support? How has the pandemic enriched our understanding of our students' contexts? How has it confronted our assumptions of what students can and cannot do?

2.6.6 Reconceptualisation of subsidy assumptions and quality assurance

Finally, the COVID-19 pandemic changed the way students and institutions think about optimal learning and teaching environments. The implications for the current definition of contact, distance and online education will need to be reconsidered in a "new normal." Similarly, new quality assurance approaches for the variety of flexible learning approaches that are going to remain during and after the pandemic will need to be developed. Student responses point to an opportunity to improve the quality of university education by creating enriching learning and teaching environments. Academic staff play a central role in creating such enriching teaching and learning environments. Therefore, it is important to invest in research on how teaching and learning could or should be reconceptualised from the experiences of academics during remote

learning to make sure that this crisis is not wasted but used to improve the quality and efficiency of higher education institutions.

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https://www.nsfas.org.za/content/media-releases/MINISTER%20BLADE%20NZIMANDE%20ON%20THE%20OPENING%20OF%20NATIONAL%20STUDENT%20FINANCIAL%20AID%20SCHEME%202021%20APPLICATION%20CYCLE.pdf

Appendix 1: Additional analyses for distance and postgraduate research students

Distance comparison

This section compares distance students' responses to those of the rest of the sample. For this analysis, **distance students are defined as students who reported that none of their modules/ courses moved to remote teaching and learning during the first semester of 2020 because they were already studying remotely.** For comparison purposes, those who did not have any modules move to remote learning, and those who had one or more modules move to remote learning will be referred to as the "non-distance" student group.

Sample demographics

Figure 1 below shows the distribution of distance vs non-distance students. Most distance students are from UNISA (65%) although there are a few distance students from other universities as well.
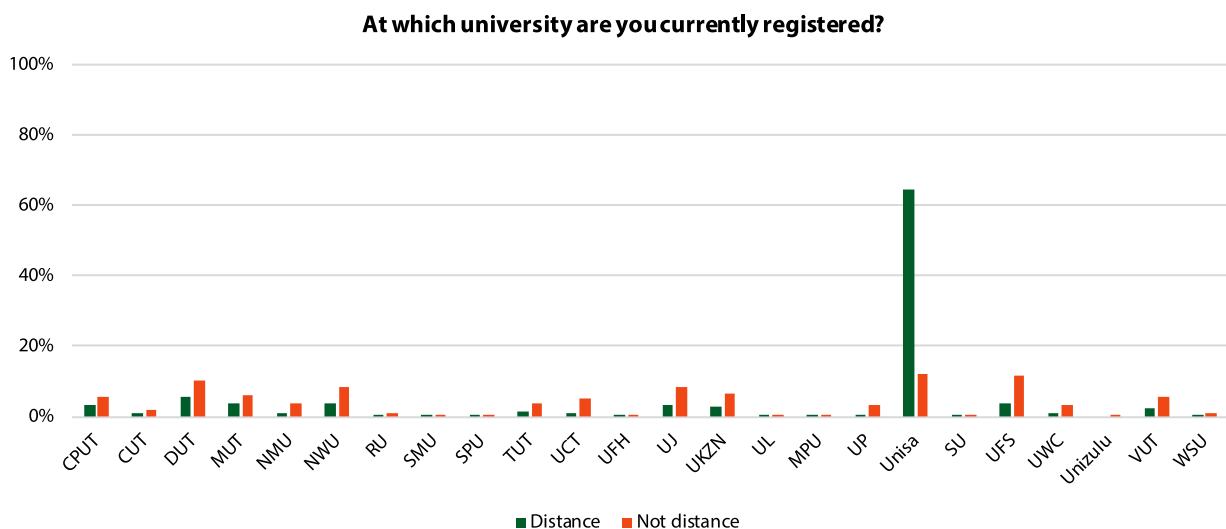
Figure 1 Participating universities
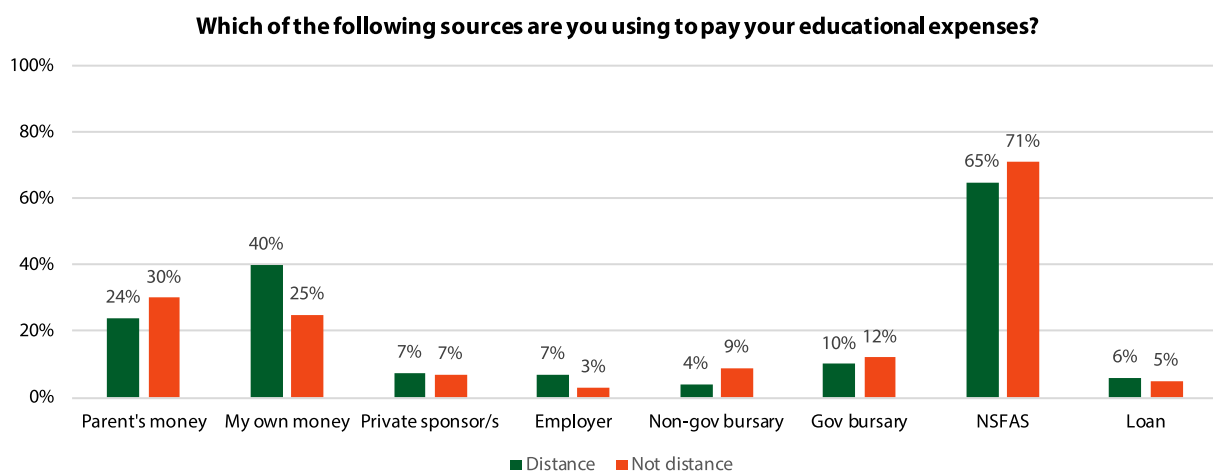
Figure 2 Source of funding to pay for studies

When reporting on which sources they use to pay for their educational expenses, more distance students (40%) said that they used their own money than non-distance students (25%). Although most students, whether distance or non-distance, use NSFAS to pay for their educational expenses.

Learning materials

Students were asked to indicate how many of their modules had prescribed textbooks. Figure 3 shows that slightly more distance students did not have any modules that require prescribed textbooks than non-distance students. From those who said that their modules did indeed have prescribed textbooks, more than 60% of both distance and non-distance students, respectively, indicated that they had bought one to four of the textbooks (Figure 4). Distance students spent slightly less on the textbooks they bought than non-distance students, where about 40% of distance students said that they spent between R500 and R1500 on textbooks (Figure 5).
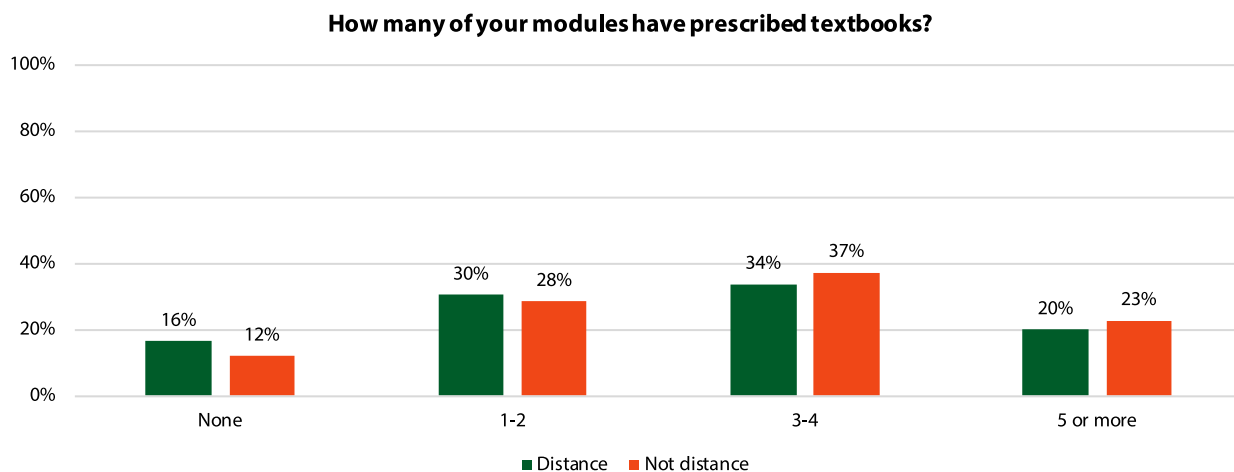
Figure 3 Number of modules with prescribed textbooks
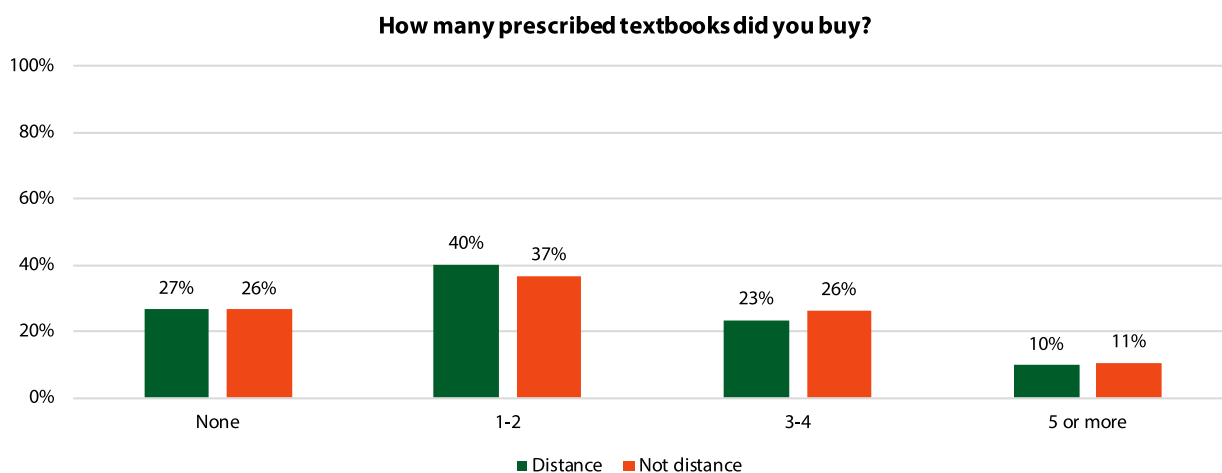
Figure 4 Number of prescribed textbooks purchased
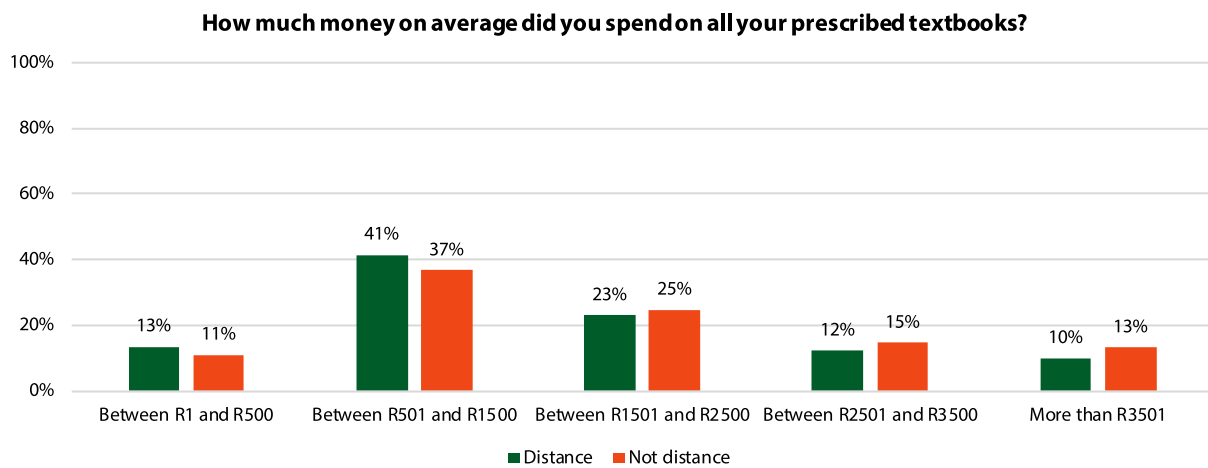
Figure 5 Average amount spent on purchasing prescribed textbooks

The largest portion of distance and non-distance students, respectively, bought textbooks second-hand from a friend or fellow student. Not many distance students bought new textbooks from a campus bookstore (13%) whereas almost a third of non-distance students bought their textbooks in this way. On the other hand, the number of distance students buying textbooks online in a hard copy format (e.g. through Takealot, Loot, or online bookstores) (22%) is more than double that of non-distance students (10%). About a third of both distance and non-distance students, respectively, bought their textbooks new from a bookstore off campus (Figure 6).
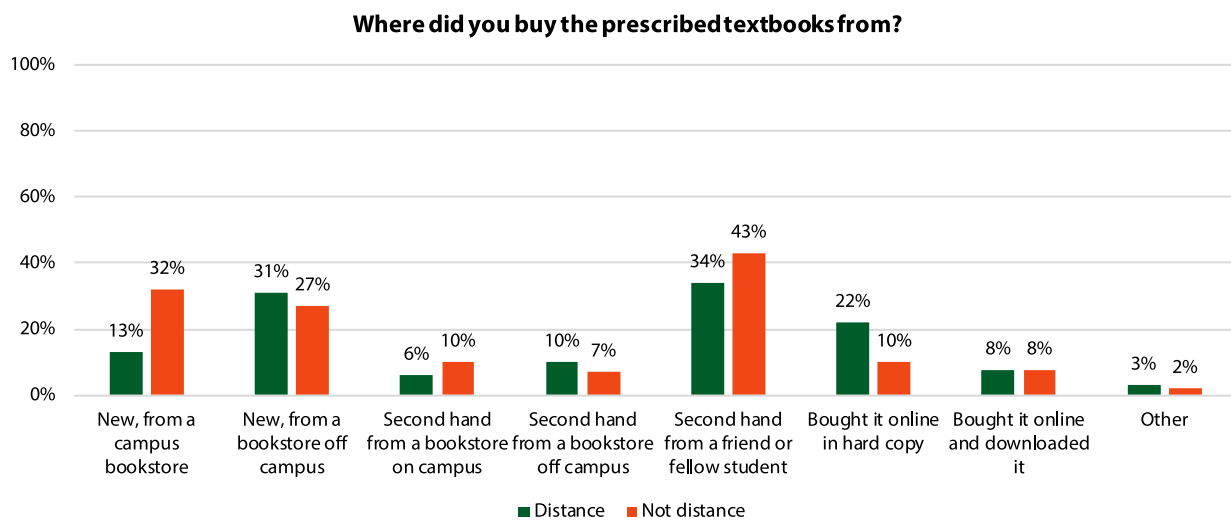
Figure 6 Places where students buy prescribed textbooks

Those students who said that they did not buy any textbooks, were asked in which other ways they got access to their prescribed textbooks. Almost 30% of both distance and non-distance students, respectively, said they got access to the textbooks they did not buy by downloading them for free (e.g. through file share, torrent, etc.) and almost a quarter said that they borrowed the textbooks from friends or classmates. Slightly fewer distance students got access to the textbooks they did not buy by downloading them for free (e.g. through open access) than non-distance students (Figure 7).
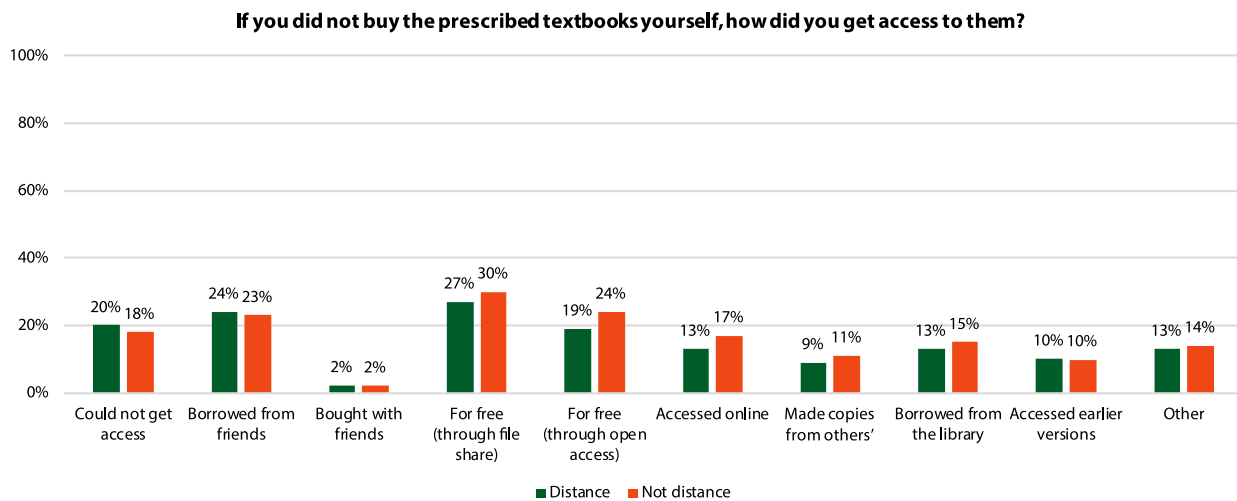
Figure 7 Alternative ways of accessing prescribed textbooks

Students were asked why they would choose not to buy a prescribed textbook, even if they had the money. They could only provide one main reason. Almost 40% of both distance and non-distance students, respectively, said that they would choose not to buy prescribed textbooks even if they had the money because they were too expensive. There were also about a third of students who said that they would always choose to buy textbooks, with slightly more distance students who held this view (Figure 8).
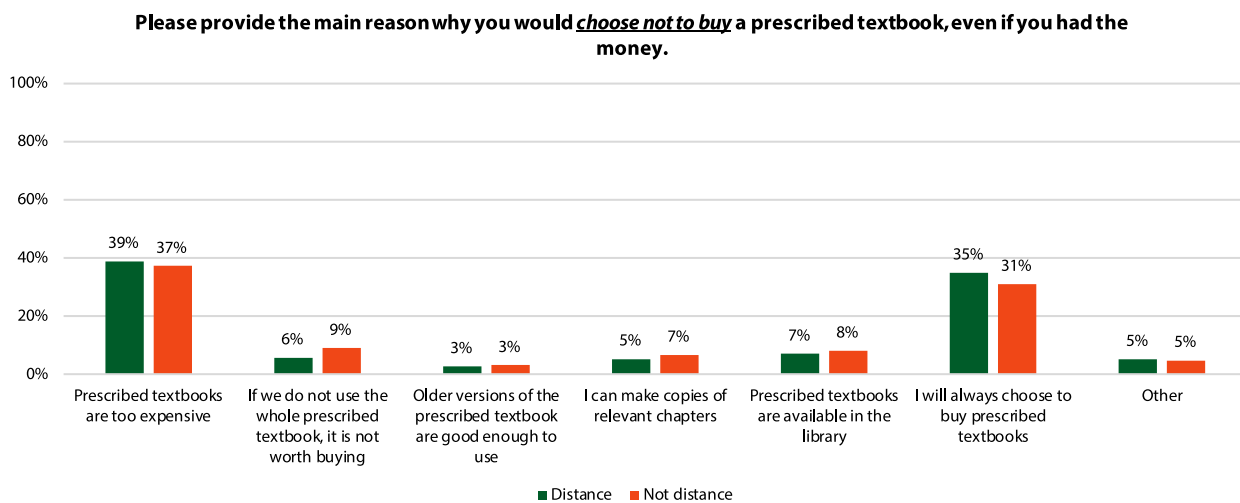
Figure 8 Main reasons why students would choose not to buy textbooks

Most students, distance (84%) and non-distance (91%), reported that their modules/courses made use of other learning materials beyond prescribed textbooks. When asked what these other learning materials were, distance students said that their modules did not make use as much of quizzes, lecturers' notes such as slides or summaries or online videos as the modules of non-distance students (Figure 9). The learning material used most in distance students' modules were study guides (76%).

73
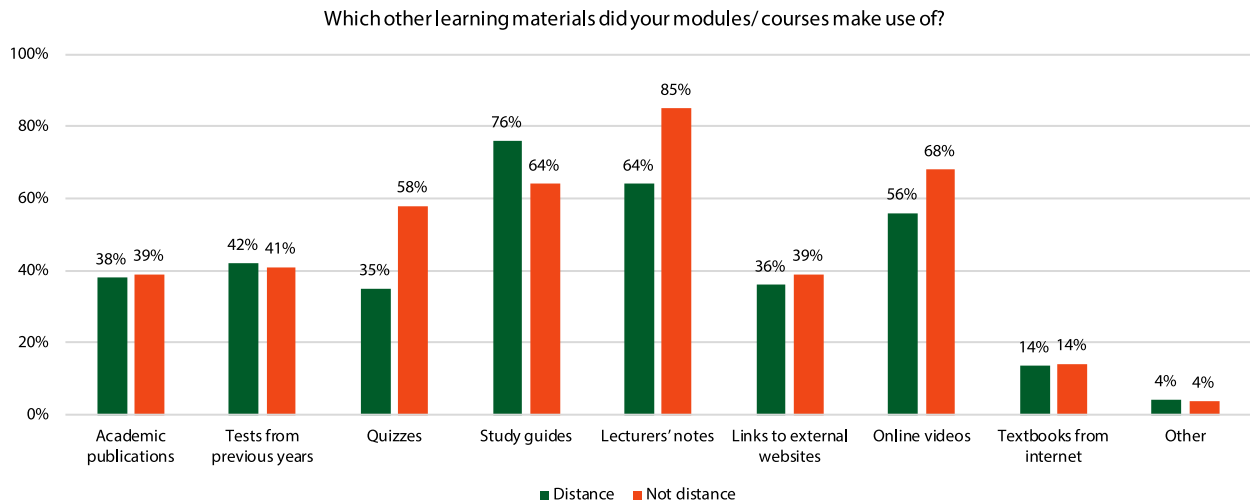
Figure 9 Type of learning materials students engage with

Students were then asked how they accessed these learning materials before the end of March 2020 and during remote teaching and learning (Figure 10). For the data points on remote teaching and learning the non-distance students were students who reported that one or more of their modules/courses moved to remote (distance/online) teaching and learning during the first semester of 2020. Before the end of March 2020 the largest portion of distance students got access to their learning materials through copies provided by their university or lecturers (43%). During remote teaching and learning more distance students accessed learning materials in this way (25%) than non-distance students (15%). Non-distance students used the learning management system to download learning materials almost twice as much as distance students. There were also fewer distance students who got learning materials from friends or classmates, especially before the end of March (23% vs 33%).
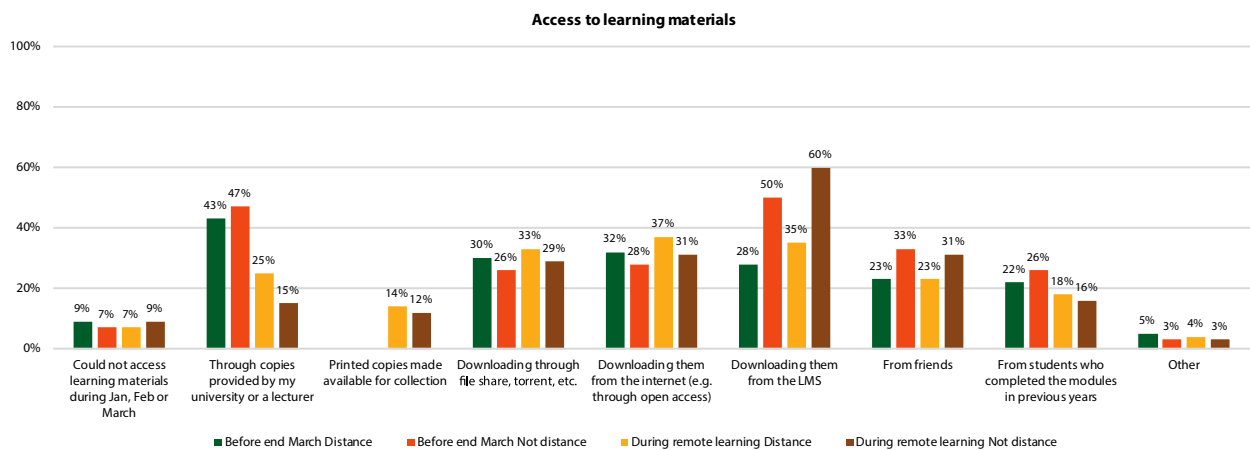
Figure 10 Access to learning materials before and during lockdown

Access to devices, data and connectivity

Distance and non-distance students own a similar number of devices to engage with their learning, as seen in Figure 11. Most of them own a smartphone (Figure 12), with slightly more non-distance students (58%) than distance students owning a laptop (54%).
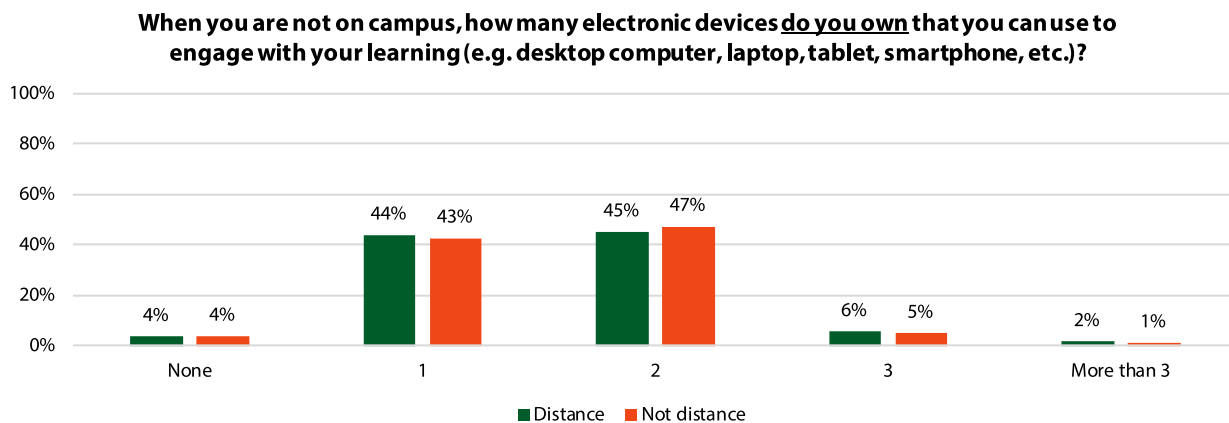
When you are not on campus, how many electronic devices <u>do you own</u> that you can use to engage with your learning (e.g. desktop computer, laptop, tablet, smartphone, etc.)?

■ Distance ■ Not distance

Figure 11 Number of devices owned by students

Please indicate which devices you <u>own and use</u> to engage with your studies when you are off-campus.

■ Distance ■ Not distance
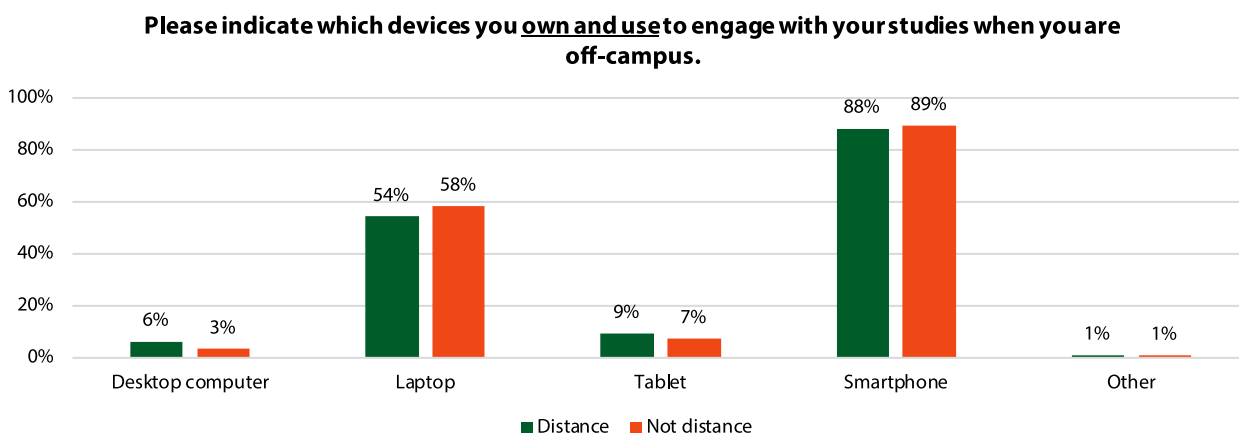
Figure 12 Types of devices students own

Students who reported that they owned devices were asked further how they obtained the devices (Figure 13). The largest portion of distance students bought their devices themselves (41%) and more of them did this than non-distance students (31%).

Please indicate how you got your devices.

■ Distance ■ Not distance
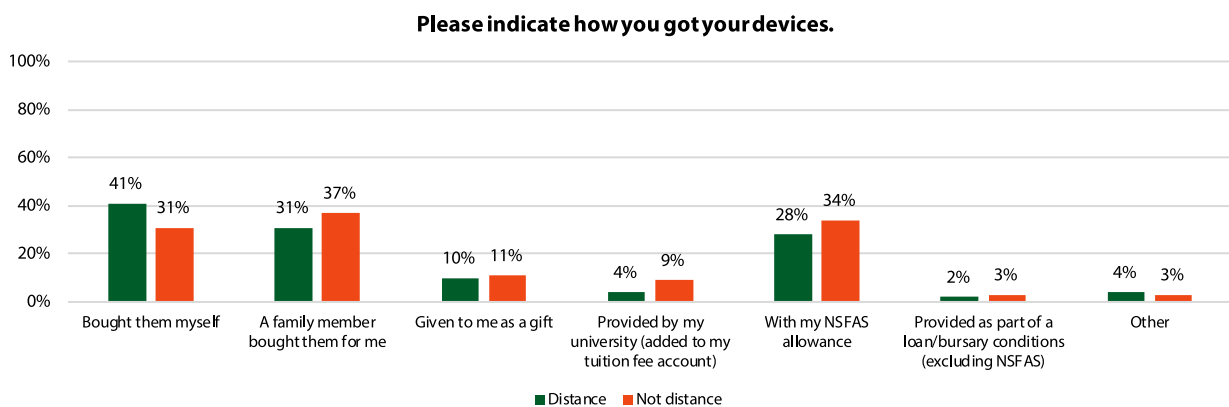
Figure 13 How students got the devices they own

Students who reported that they owned no devices, were asked that if they still had access to one or more devices to engage with their studies while off-campus, which devices they had access to. Most of these students reported that they had access to a smartphone, with slightly more non-distance students indicating so. Almost 20% of both distance and non-distance students, respectively, said they had access to a laptop that they did not own (Figure 14). Students who did not own a device but still had access to one or more were asked how they accessed these devices. More than half of both distance and non-distance students, respectively, borrowed devices from family members, more than a third borrowed them from friends or fellow students, and around a third accessed the devices at an internet café. Slightly more distance students (21%) than non-distance students (13%) accessed devices at public libraries (Figure 15).

If you do not own any devices, but still have access to one or more devices to engage with your studies off-campus, which devices do you have access to?
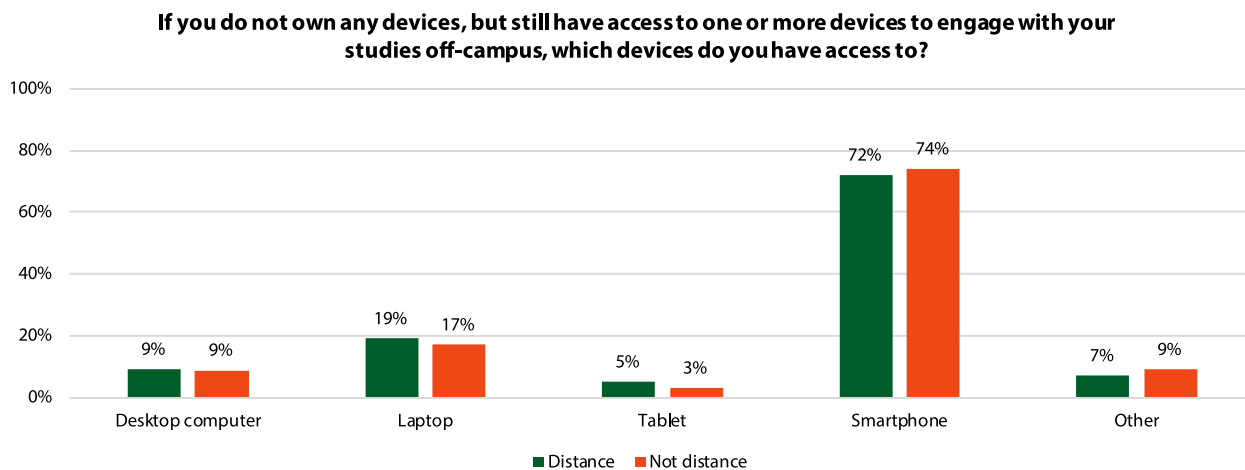
Figure 14 Type of devices students who do not own any devices have access to

If you do not own any devices, but still have access to one or more devices to engage with your studies off-campus, how do you get access to these devices?
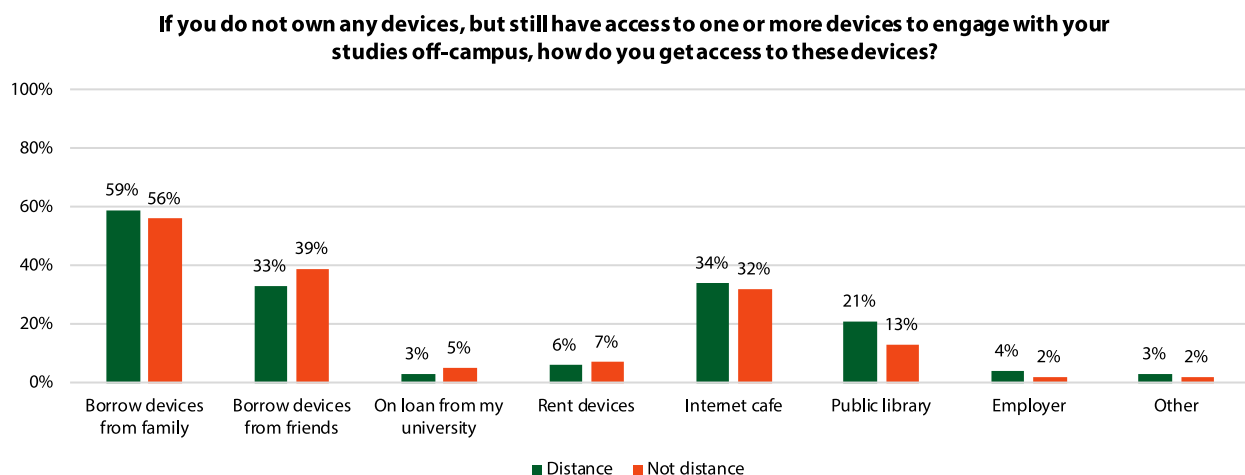

Figure 15 Access to devices for students who do not own any

Engagement with educational technology

Students were also surveyed on their engagement with online teaching and learning activities. More than three-quarters of distance students had engaged in online teaching and learning activities (77%) compared to around half of non-distance students (55%). Furthermore, distance students engaged more in most of the online activities, especially in submitting assignments, writing tests and downloading learning materials such as videos, audio files and lecture slides (Figure 16).

Which online activities have you engaged in during your time at university?
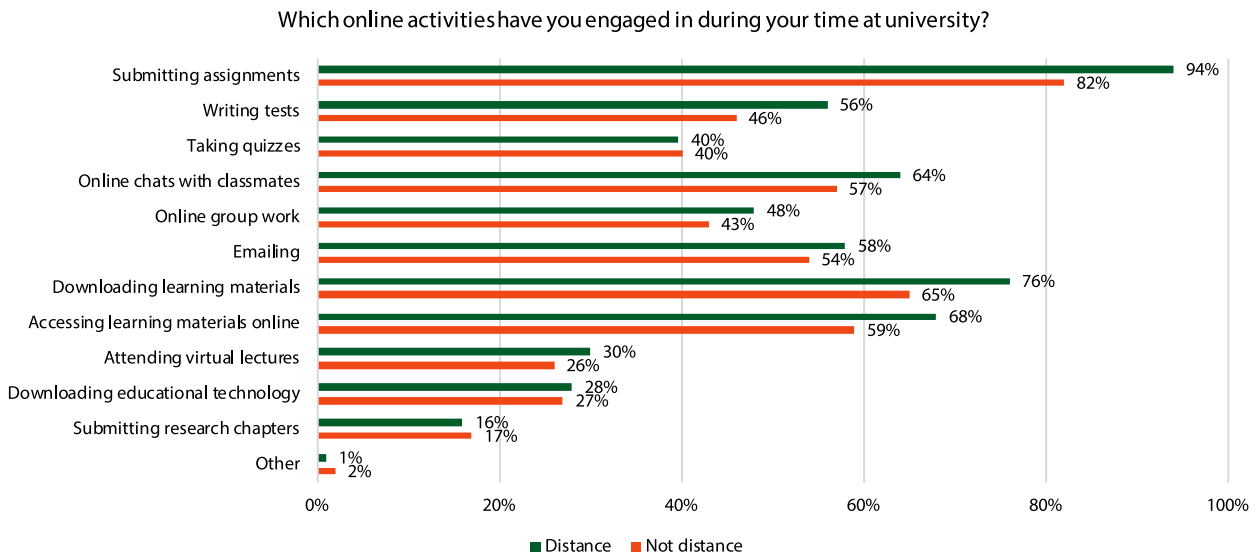
Figure 16 Online activities students engaged in during remote learning

When asked how often they engaged in these online activities, the largest portion of both distance and non-distance students, respectively, said that they engaged in the activities daily. However, more than a quarter of distance students said that they engaged in the online activities every second or third day, slightly more so than non-distance students (Figure 17). About a third of both distance and non-distance students, respectively, said that they used more than six gigabytes of data on the online activities in an average month. Although slightly more non-distance students (22%) than distance students (27%) reported that they were not sure as they did not keep track of the amount of data that they used (Figure 18).

How often have you engaged in the online activities?
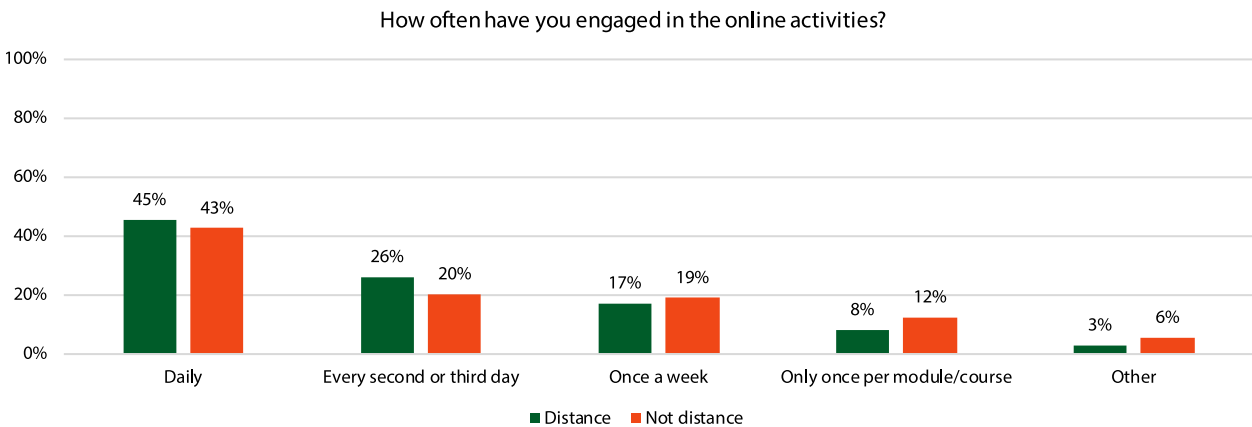
Figure 17 Frequency of online engagement

When you are off-campus, about how much data do you use on the online activities in an average month?
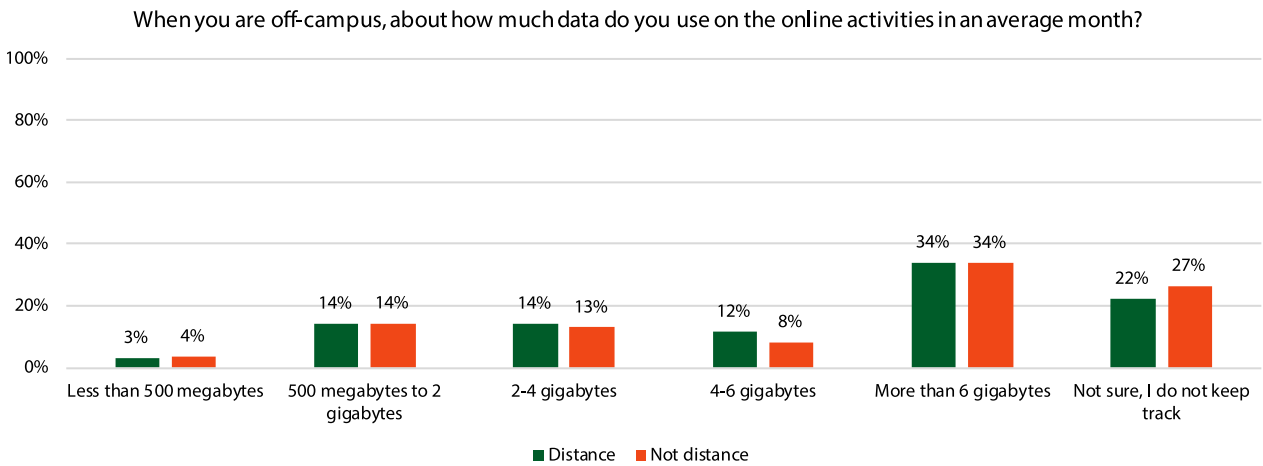
Figure 18 Amount of data students have been using during remote learning

Students were also asked to explain how they accessed the data they used for engaging in academic activities off-campus. Most students from both distance and non-distance groups, respectively, reported that they bought bundles from service providers such as Vodacom, MTN, Telkom or Cell C and around a quarter of them accessed the data by using a hotspot from someone else. Slightly more non-distance (23%) than distance students (16%) had free access to data through their universities (Figure 19).

How do you access the data you use for engaging in academic activities off-campus?
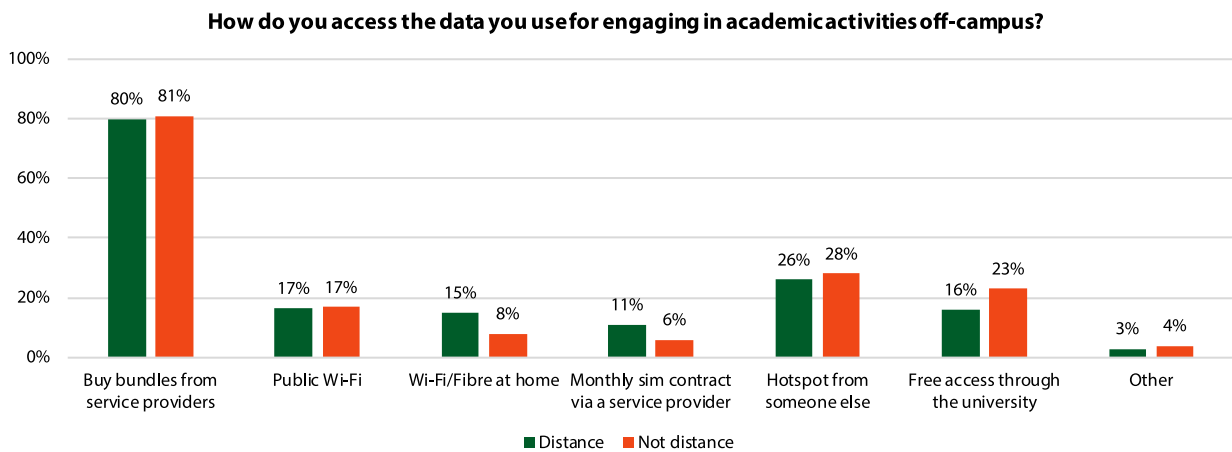
Figure 19 How students access data

Half of distance students managed to pay with their own money for the data they used to engage with their studies when off-campus and around 40% of them had their family or friends pay for their data. The largest portion of non-distance students paid for their data used through their NSFAS funding (45%), around a third of distance students used their NSFAS funding to pay for data for their studies (Figure 20).
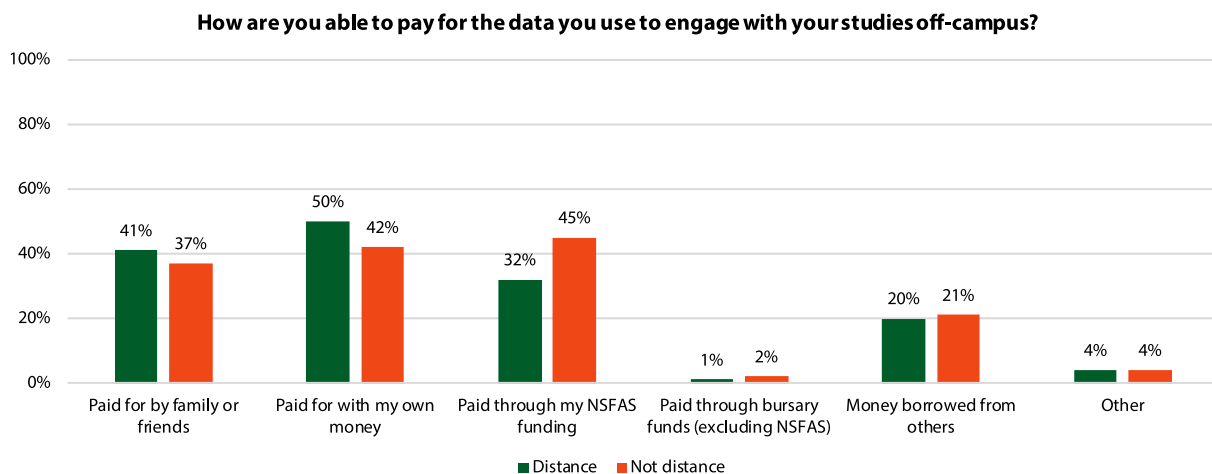
How are you able to pay for the data you use to engage with your studies off-campus?

Figure 20 Payment options for data

Students were asked to reflect on the quality of their engagement with remote learning. Distance students reported better quality of remote learning materials on all items under discussion than non-distance students. The largest difference was obtaining clear learning outcomes or objectives, where more than three-quarters of distance students reported that their remote learning materials provided this compared to less than two-thirds of non-distance students reporting this. Most distance students also reported that their remote learning materials required them to complete and submit assignments and provided clear instructions and used a level of language that was easy for them to follow, respectively (Figure 21).

In general, to what extent have the remote learning materials:
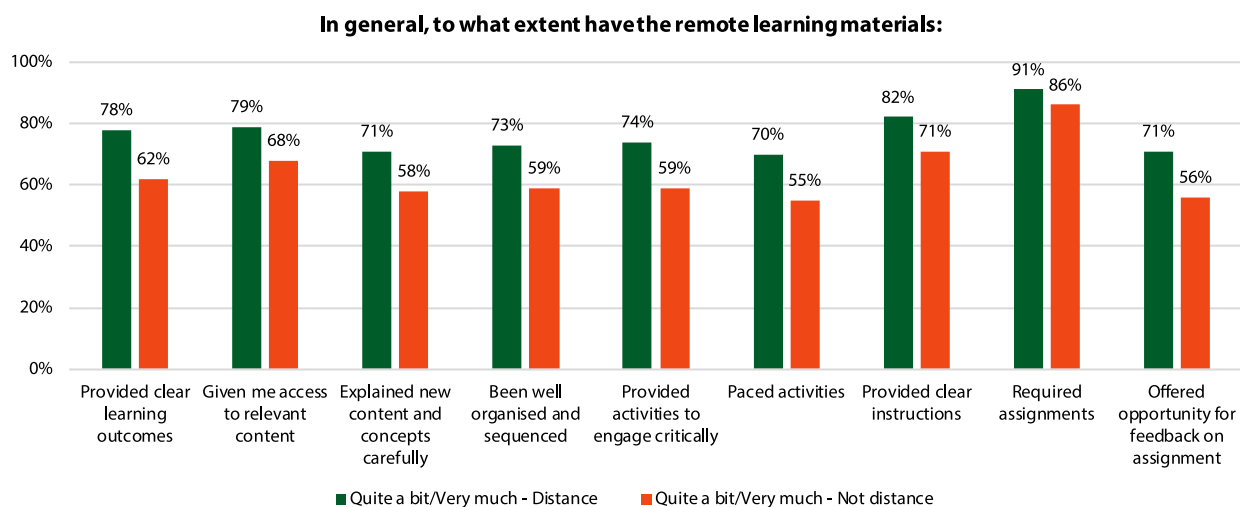
Figure 21 Quality of remote teaching and learning

More distance students reported that they became actively engaged in modules/courses using technology (63%) than non-distance students (53%). About 30% of both distance and non-distance students, respectively, said that they were more likely to skip classes when materials presented in class were made available online (Figure 22). Three-quarters of distance students reported that they were well prepared to use technology needed in their modules/courses when they started university (Figure 23). However, most students, both distance and non-distance students, also said that they would have been more successful students if they were better trained to use technology effectively (Figure 24). The aspects that most students thought would make them more successful were learning to effectively make use of the library and its resources and ethically engaging with academic material (e.g. referencing, plagiarism, etc.), regardless whether they were distance or non-distance students. Although with regard to most aspects students

were asked about, distance students scored higher than non-distance students, with the biggest gaps on social media such as Facebook and Twitter and instant messaging such as WhatsApp and Telegram as learning tools.
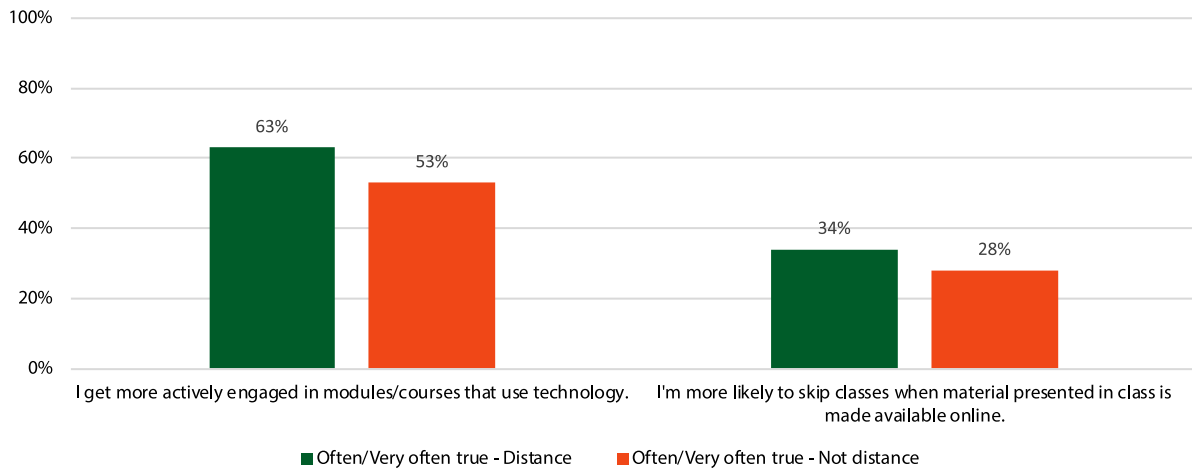

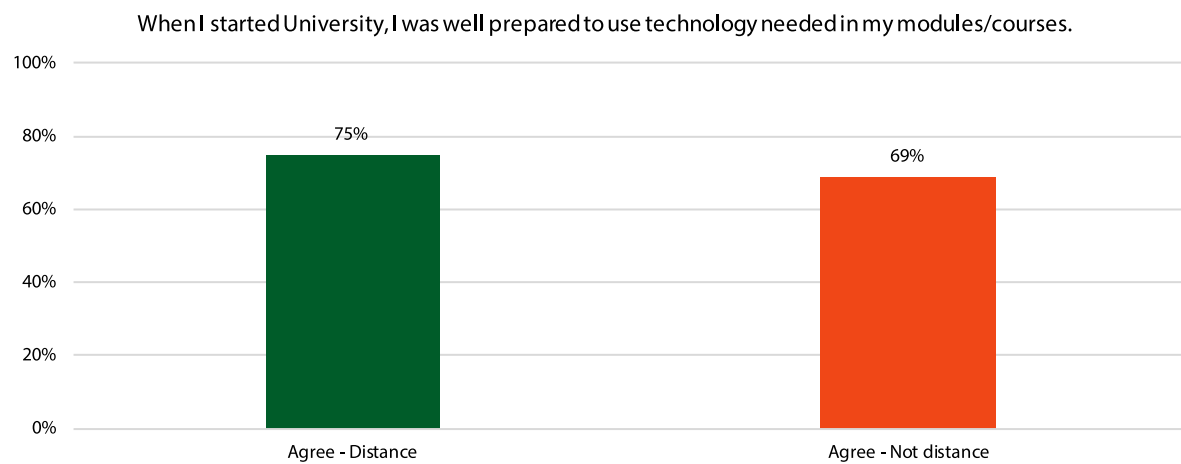*Figure 22 Sense of engagement with modules/courses that use technology*
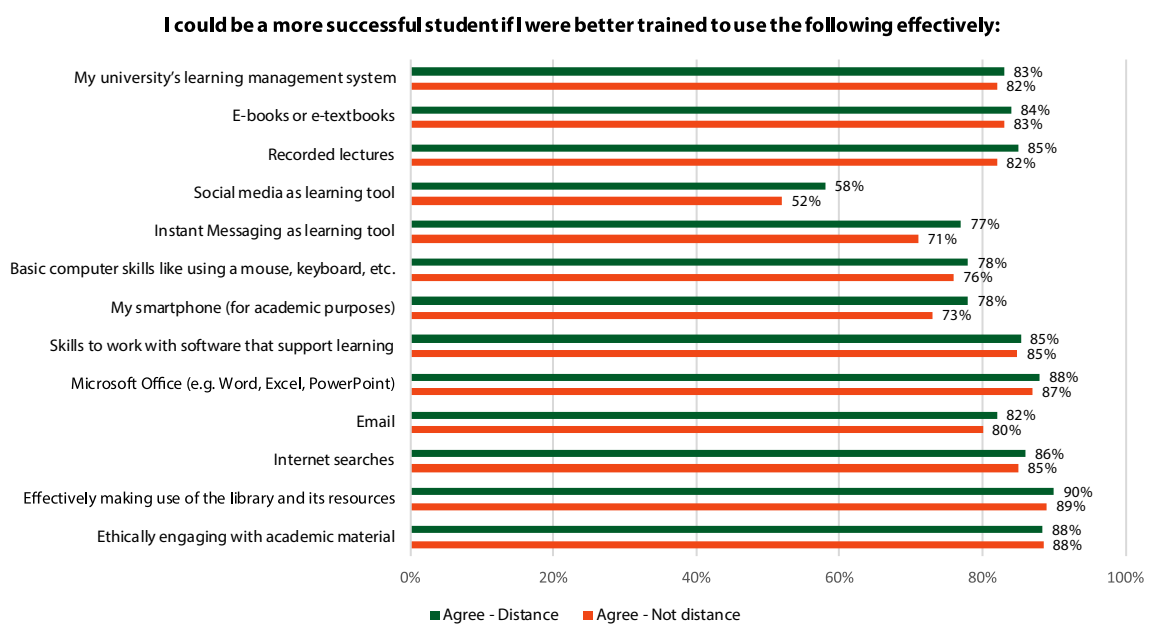

Figure 23 Preparedness to use technology

Figure 24 Digital skills needs

Postgraduate students (Research Masters and PhDs)

Research postgraduate students, i.e. Master's degree (research) and doctoral degree students, were also asked to complete some of the survey questions, such as demographic and access to devices questions, as well as access to learning materials questions that were aimed specifically at them.

Sample demographics

Looking at the demographics of the research postgraduate students who completed the survey, the largest portion of postgraduates are registered at the University of Cape Town (UCT; 25%), with 10% of the sample from the DUT (Figure 25). More than half of the research postgraduate students are female (53%), 70% of them are African and 15% white. More than 70% of them are first-generation students.
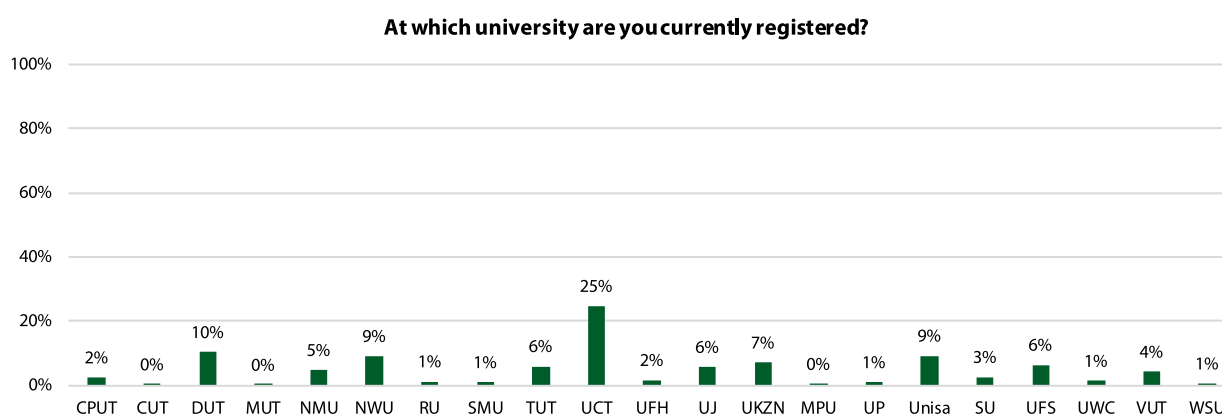

Figure 25 Participating universities where research postgraduate students are registered

Two-thirds of research postgraduate students use their own money to pay for educational expenses and 45% use a non-governmental bursary such as institutional or merit bursaries or bursaries from private companies (Figure 26).
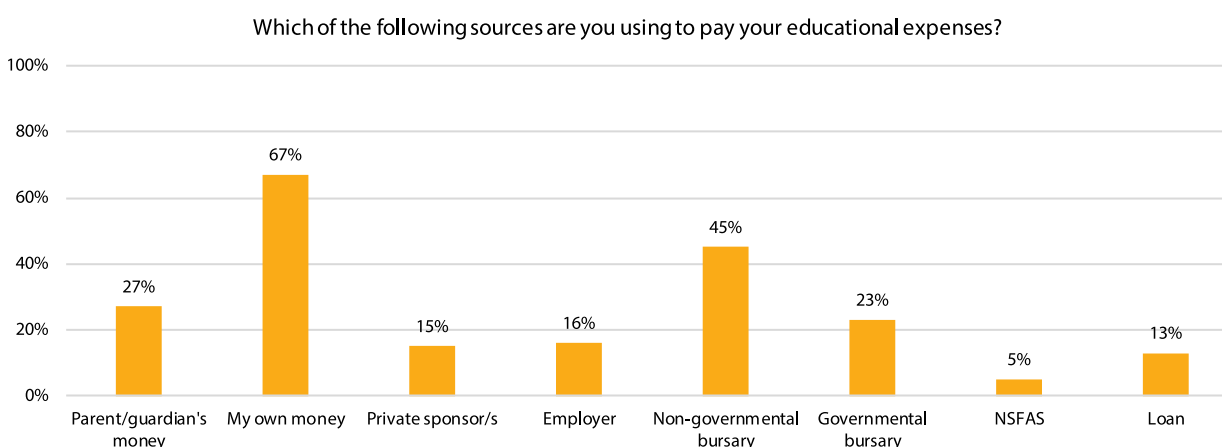

Figure 26 Source of research postgraduate students' funding to pay for studies

Access to learning materials

Research postgraduate students were asked a few questions regarding their access to learning materials required for their degrees. Most of them agreed that they were able to use scholarly databases such as EBSCO and SABINET to find sources that they needed (80%) and that they often

81

accessed e-resources via open access (80%). Three-quarters of research postgraduate students were able to access all the electronic readings they needed for their research via their university's library (75%), while slightly fewer students said that they were able to access all the books they needed via the university's library (66%). Around half of research postgraduate students reported that they often downloaded books without paying for them through, for example, file share or torrent (52%). More than three-quarters of them agreed that the lockdown and Covid-19 responses negatively impacted their research but a similar number of them also agreed that they had adequate access to their supervisors during the lockdown/COVID-19 response (76%). But only just over half of them said that they had adequate access to their university's library resources during lockdown/Covid-19 responses (54%).
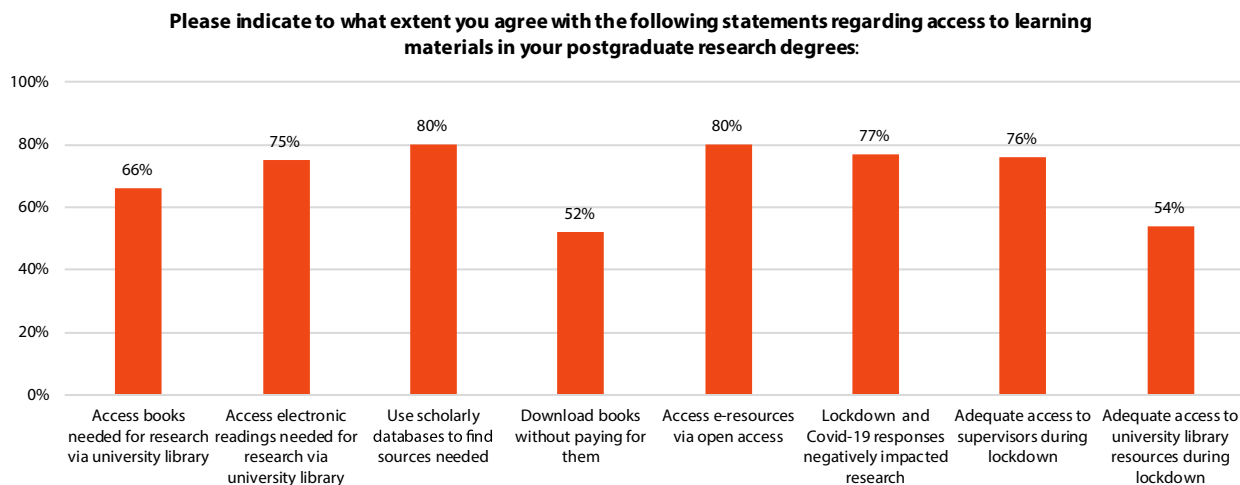
Please indicate to what extent you agree with the following statements regarding access to learning materials in your postgraduate research degrees:

Figure 27 Research postgraduate students' access to learning materials

Access to devices

On questions regarding access to devices, 60% of research postgraduates said that they owned two electronic devices to engage with their learning (Figure 28). However, there were also 2% of them who said that they did not own any devices. As seen in Figure 29, most postgraduates own a laptop (86%) and a smartphone (80%). Almost two-thirds of research postgraduate students bought these devices themselves, with almost 30% of them having a family member who bought the devices for them (Figure 30).
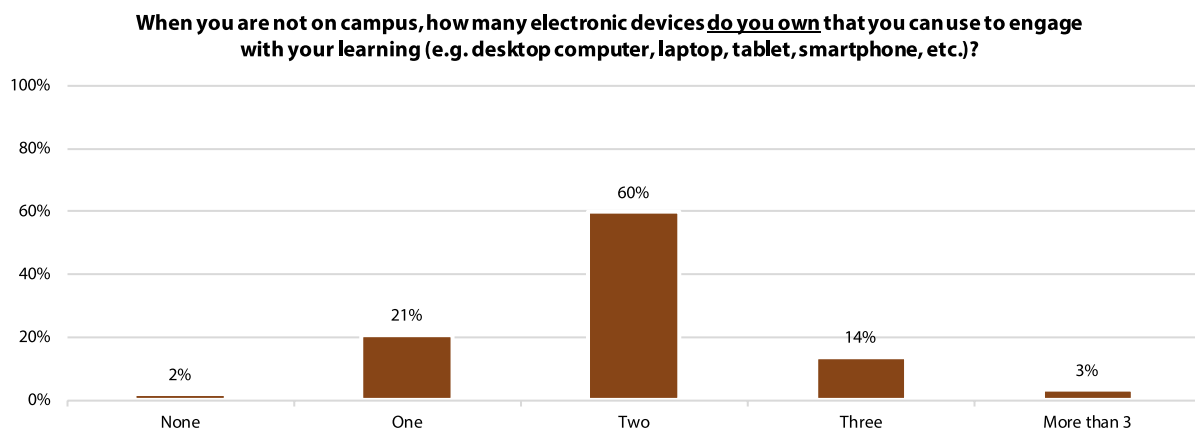
When you are not on campus, how many electronic devices _do you own_ that you can use to engage with your learning (e.g. desktop computer, laptop, tablet, smartphone, etc.)?

Figure 28 Number of devices owned by research postgraduate students

Please indicate which devices you <u>own and use</u> to engage with your studies when you are off-campus
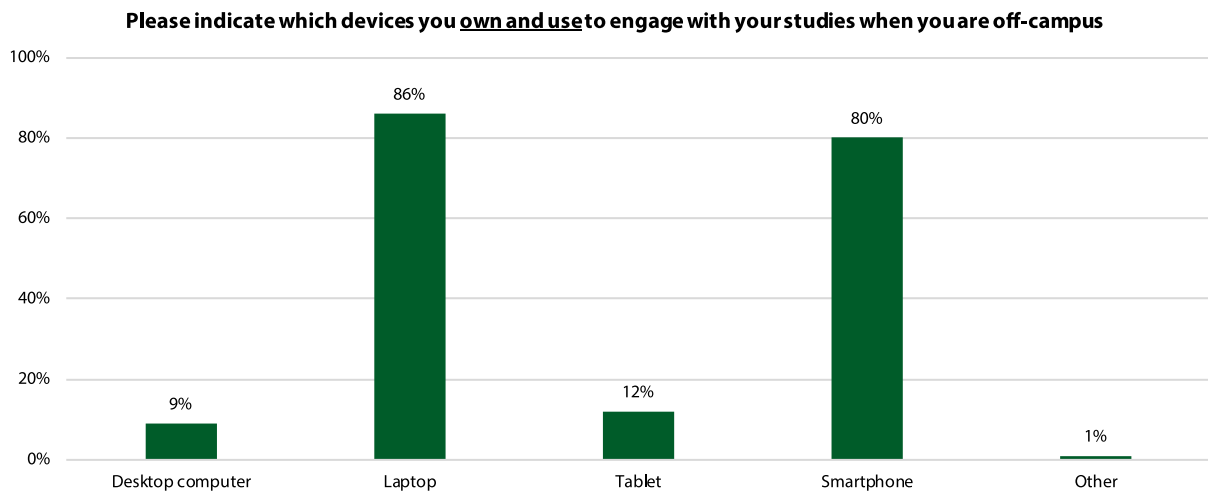
Figure 29 Types of devices postgraduate research students own

Please indicate how you got your devices
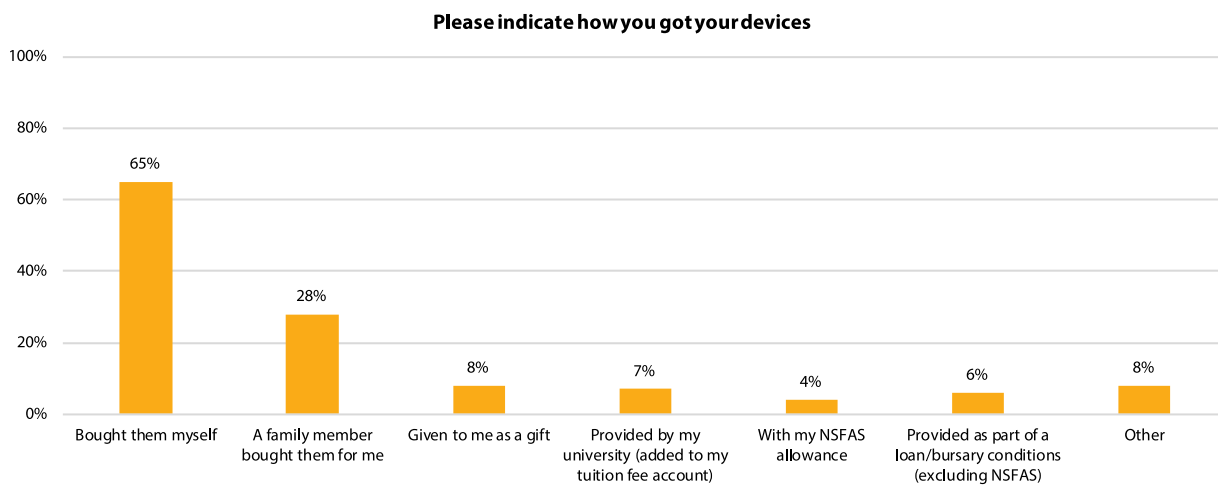

Figure 30 How research postgraduate students got the devices they own

The 2% of the research postgraduate students who said that they did not own a device (N=15) were asked that if they still had access to a device to engage with their studies, which devices they had access to. Almost two-thirds of them said that they had access to a smartphone and just over 10% said that they had access to a tablet (Figure 31). When asked how they accessed these devices, over half of them said that they borrowed the devices from friends/fellow students, while a third of them said that they borrowed the devices from family members or got access to them at an internet café, respectively (Figure 32).
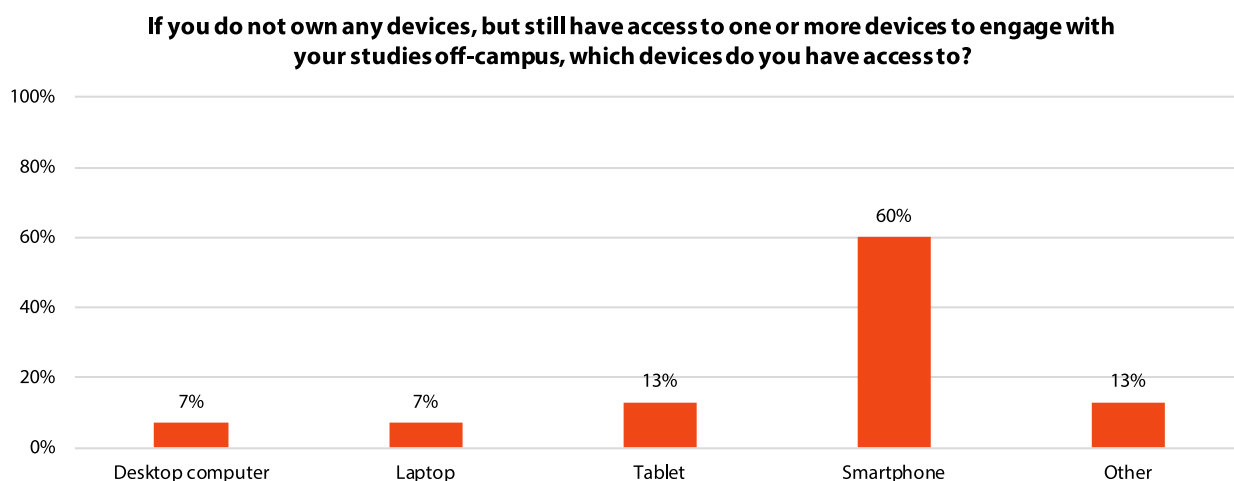
If you do not own any devices, but still have access to one or more devices to engage with your studies off-campus, which devices do you have access to?

Figure 31 Type of devices research postgraduate students who do not own any devices have access to

If you do not own any devices, but still have access to one or more devices to engage with your studies off-campus, how do you get access to these devices?
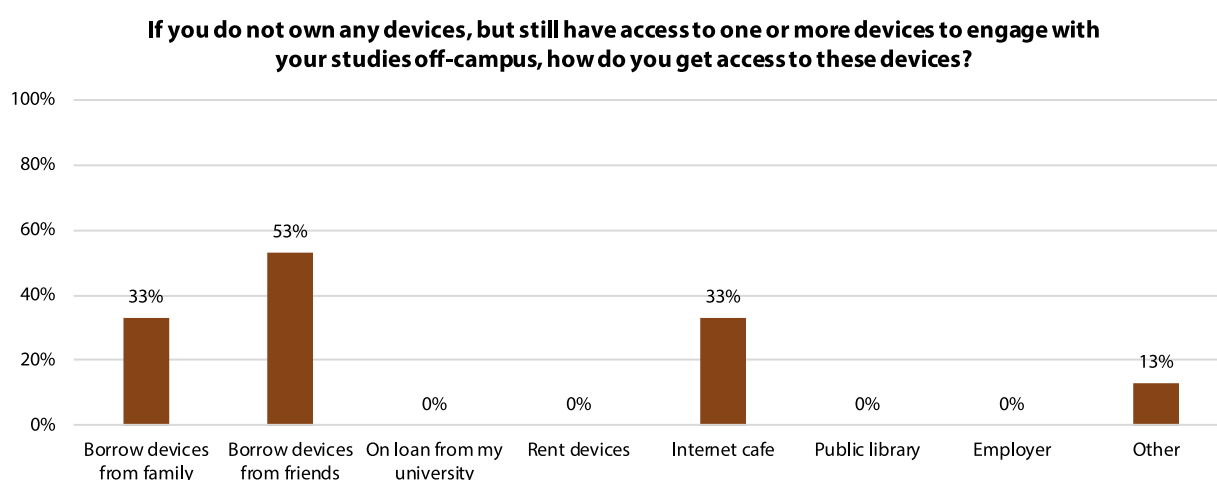
Figure 32 Access to devices for research postgraduate students who do not own any

Engagement with educational technology

Research postgraduate students were also asked whether they had engaged in online teaching and learning activities and 71% of them said that they had done so during their time at university. Less than half of the postgraduates had engaged in submitting assignments, around 20% in writing tests and taking quizzes, respectively, and 30% in participating in online group work during their time at university. On the other hand, most of them had engaged in emailing, almost half in attending virtual lectures and downloading educational technology, software or apps to enable learning, respectively, and almost three-quarters on submitting research chapters (Figure 33). Just over half of research postgraduate students reported that they engaged daily in these online activities (53%) and 20% said that they engaged in them every second or third day (Figure 34).

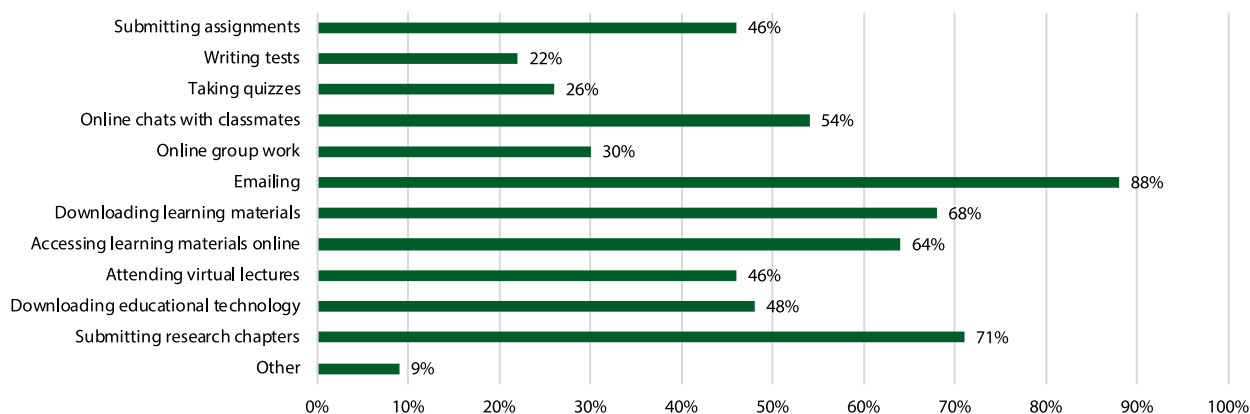**Which online activities have you engaged in during your time at university?**

Activity	Percentage
Submitting assignments	46%
Writing tests	22%
Taking quizzes	26%
Online chats with classmates	54%
Online group work	30%
Emailing	88%
Downloading learning materials	68%
Accessing learning materials online	64%
Attending virtual lectures	46%
Downloading educational technology	48%
Submitting research chapters	71%
Other	9%

Figure 33 Online activities research postgraduate students engaged in during their time at university

How often have you engaged in the online activities?

Frequency	Percentage
Daily	53%
Every second or third day	20%
Once a week	17%
Only once per module/course	3%
Other	7%
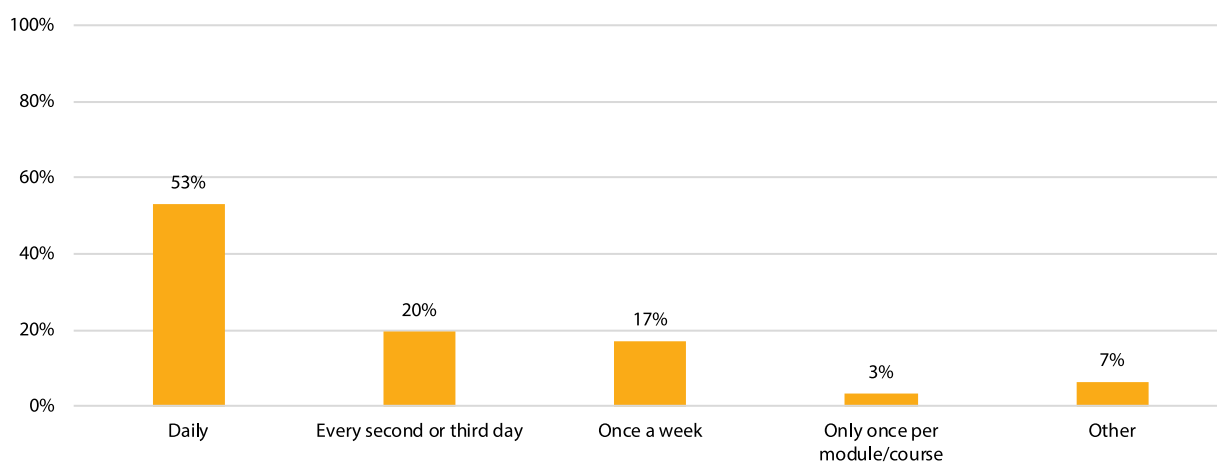
Figure 34 Frequency of online engagement

More than half of research postgraduates use more than 6 GB of data per month for their online activities (52%). Although there are also a quarter of them who are not sure how much data they use, as they do not keep track (Figure 35).

When you are off-campus, about how much data do you use on the online activities in an average month?

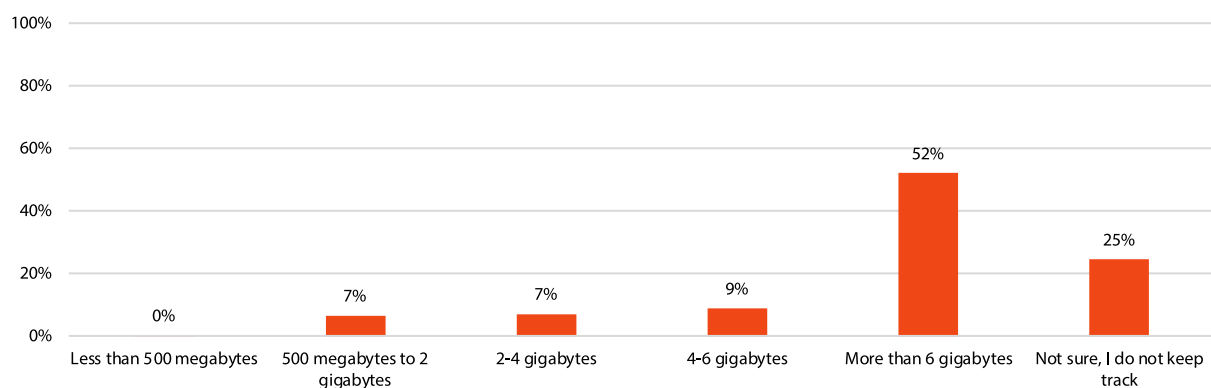| Data amount	Percentage
Less than 500 megabytes	0%
500 megabytes to 2 gigabytes	7%
2-4 gigabytes	7%
4-6 gigabytes	9%
More than 6 gigabytes	52%
Not sure, I do not keep track	25%

Figure 35 Amount of data research postgraduate students use in an average month

Around two-thirds of research postgraduates access the data they use for academic activities off-campus through buying bundles from service providers, 40% have Wi-Fi or fibre at home, 30% through free access through their universities and 15% from someone else's hotspot (Figure

36). When asked how they were able to pay for this data, more than two-thirds indicated that they paid for it with their own money (68%) and almost 20% with bursary funds (Figure 37). Less than a third of the research postgraduates said that their family or friends paid for the data (29%).
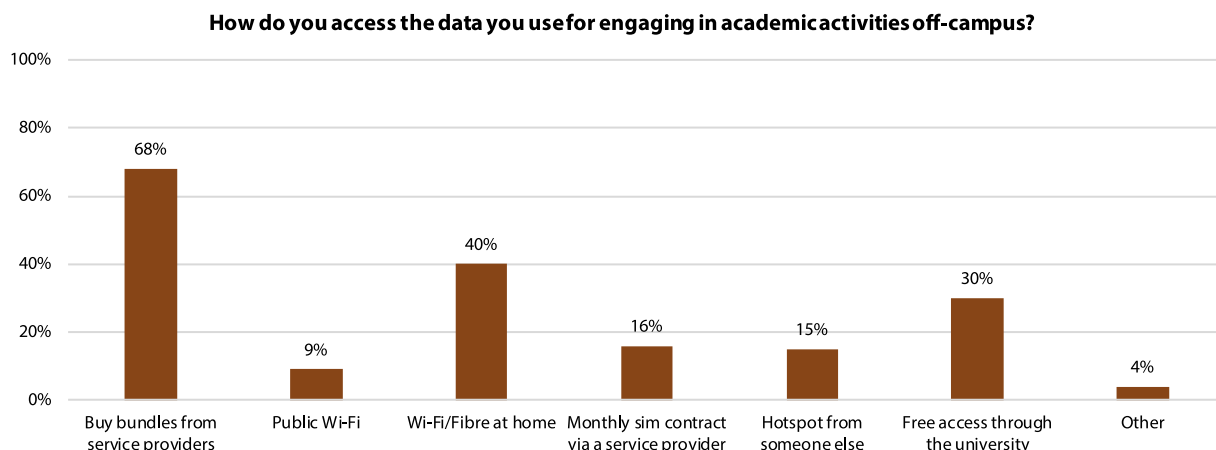
How do you access the data you use for engaging in academic activities off-campus?

Figure 36 How research postgraduate students access data

How are you able to pay for the data you use to engage with your studies off-campus?
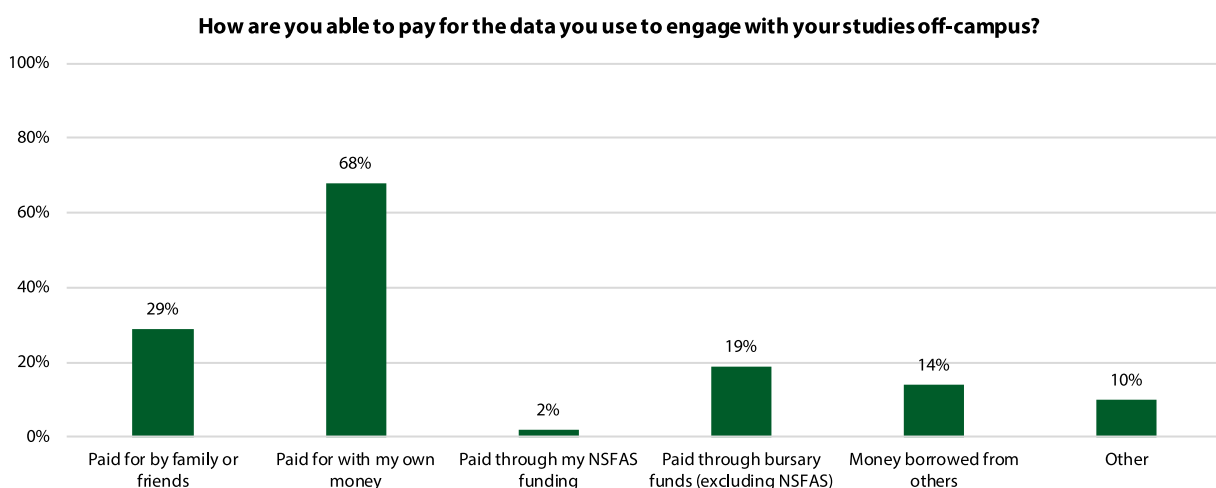
Figure 37 Payment options for data

Research postgraduate students also reported that they could be more successful students if they were better trained in certain technologies, even some basic technologies (Figure 38). Two-thirds of them said that they could have been more successful if they were better trained in basic computer skills and almost three-quarters of them said this about email (71%). Most of them also said that they could have been more successful students if they were better trained in effectively making use of the library and its resources, ethically engaging with academic material such as for referencing or plagiarism and skills to work with software or technology developed to support learning such as educational games, respectively.

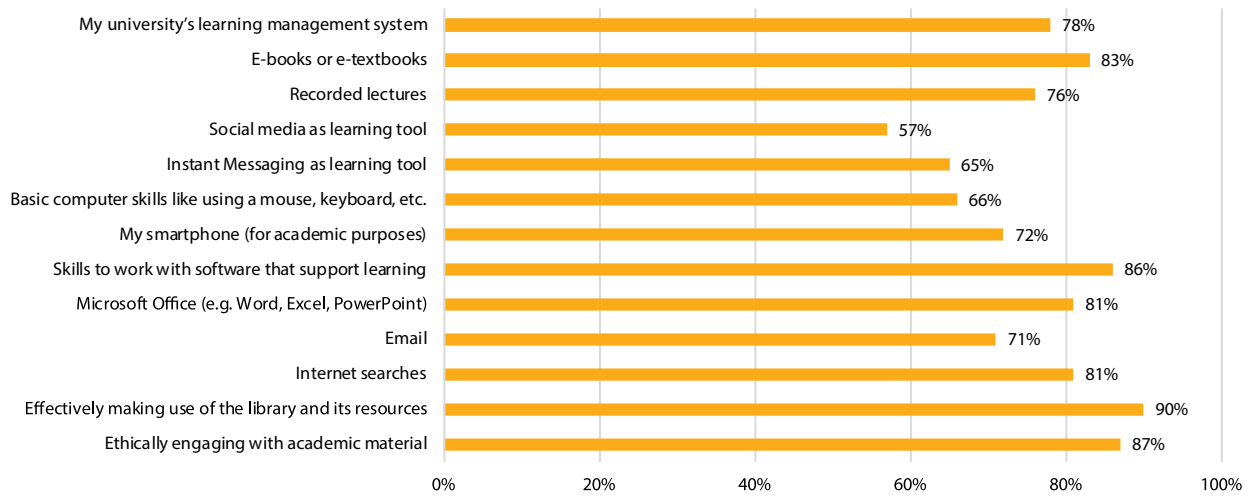**I could be a more successful student if I were better trained to use the following effectively:**

Category	Percentage
My university's learning management system	78%
E-books or e-textbooks	83%
Recorded lectures	76%
Social media as learning tool	57%
Instant Messaging as learning tool	65%
Basic computer skills like using a mouse, keyboard, etc.	66%
My smartphone (for academic purposes)	72%
Skills to work with software that support learning	86%
Microsoft Office (e.g. Word, Excel, PowerPoint)	81%
Email	71%
Internet searches	81%
Effectively making use of the library and its resources	90%
Ethically engaging with academic material	87%

Figure 38 Digital skills needs

Appendix 2: Institutional differentiation

Traditional universities (TU) represent 36% of the sample, Universities of Technology (UoT) represent 31%, and Comprehensive universities (CU) represent 33% (including UNISA). The graphs below differentiate data between the three broad university types to allow a closer look at how students from different types of universities responded.

Figure 1 shows that 77% of students from UoTs who completed the survey were NSFAS-funded. In comparison, around two-thirds of students from TUs and CUs, respectively, were NSFAS-funded.
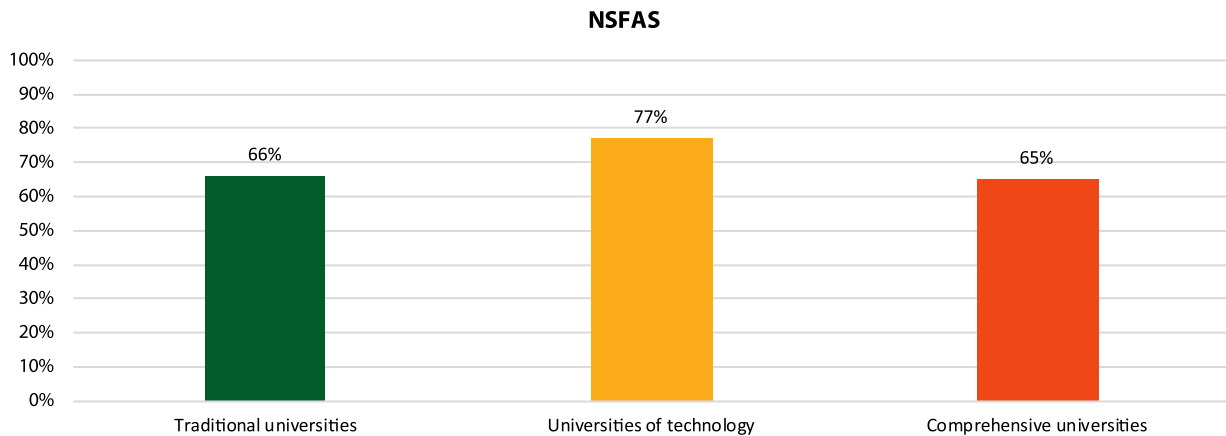
Figure 1 NSFAS distribution between university types
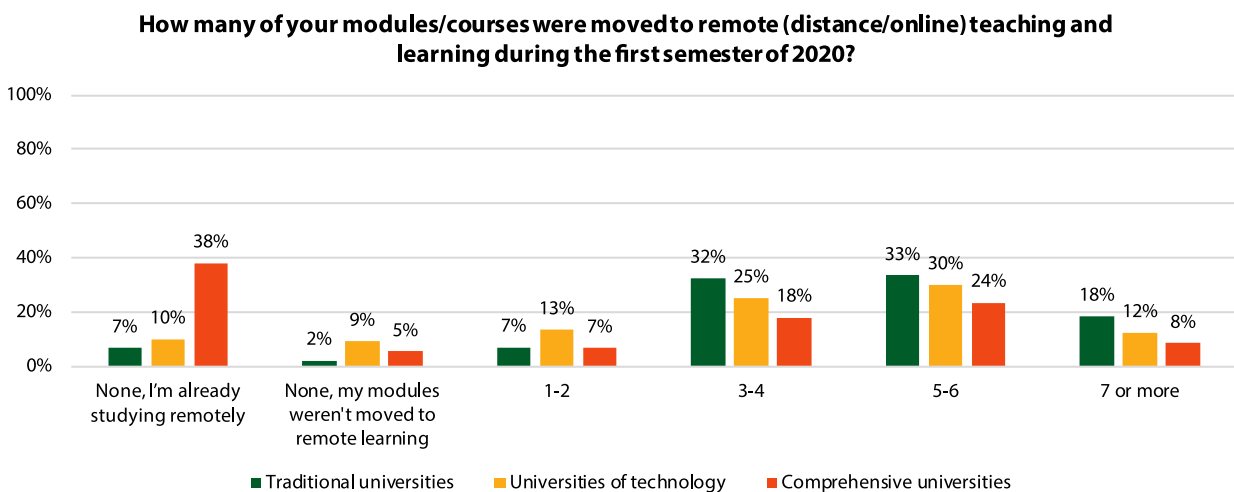
Figure 2 Modules moved to remote learning

Almost 10% of UoT respondents indicated that none of their modules had moved to remote learning during the first semester of 2020. This is compared to 5% CUs and 2% of TUs. The inclusion of UNISA in the comprehensive group inflates the percentage of students indicating that they were already studying remotely (Figure 2).

Where did you buy the prescribed textbooks from?
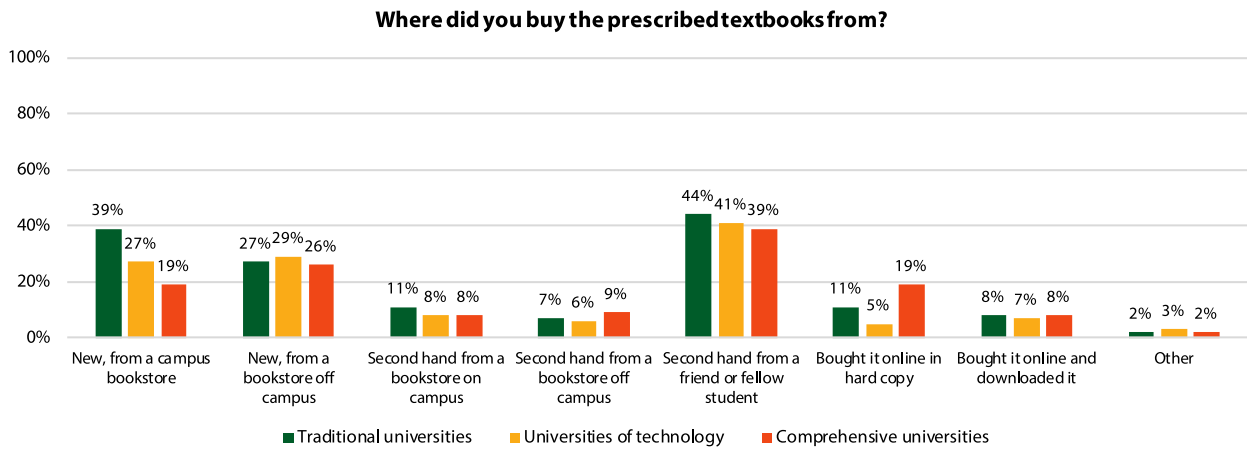
Figure 3 Where students buy textbooks

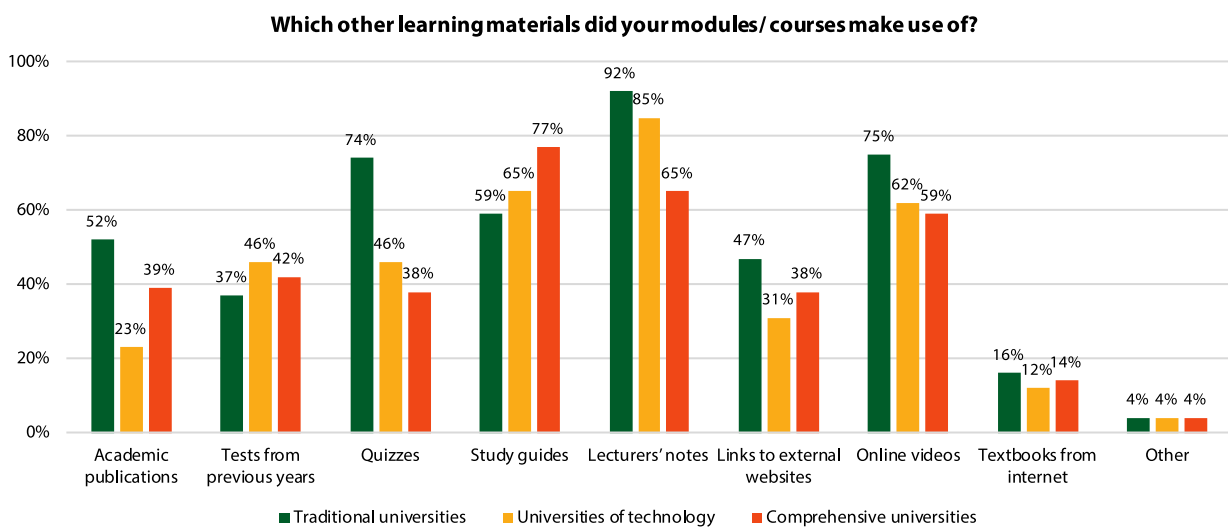**Which other learning materials did your modules / courses make use of?**

Figure 4 Alternative learning materials students made use of in 2020

Figure 3 shows that 77% of students from TUs bought textbooks new from on/off campus bookstores or online, in comparison with 61% of students from UoTs and 64% of students from CUs. More students from TU also bought second-hand books through different platforms than the other university types. Figure 4 shows that students from TUs reported a wider range of alternative learning materials that they engaged with than both UoTs and CUs. The only exception was study guides, where 77% of students in CUs and 65% of students in UoTs made use of such guides, in comparison with 59% of students from TUs.

89

Figure 5 shows that all university types showed a marked decrease in dependence on lecturers for learning materials prior to, and during remote learning. All other means of obtaining learning material also increased for all university types, however, UoTs showed much less downloading activity beyond LMS, and in contrast, CUs showed much less LMS activity than the other university types (this is confirmed by the distance/non-distance comparison analysis shown earlier and could be largely attributed to UNISA students).
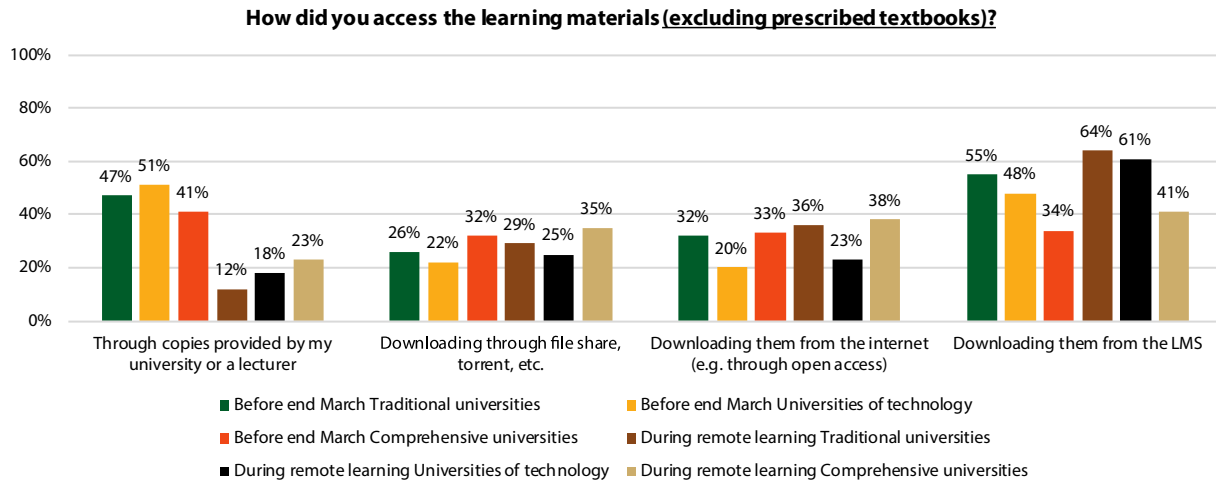
How did you access the learning materials (excluding prescribed textbooks)?

Figure 5 How students accessed learning materials

If your face-to-face/contact modules did not move to remote (distance/online) learning, how are you engaging with your learning materials and studies?
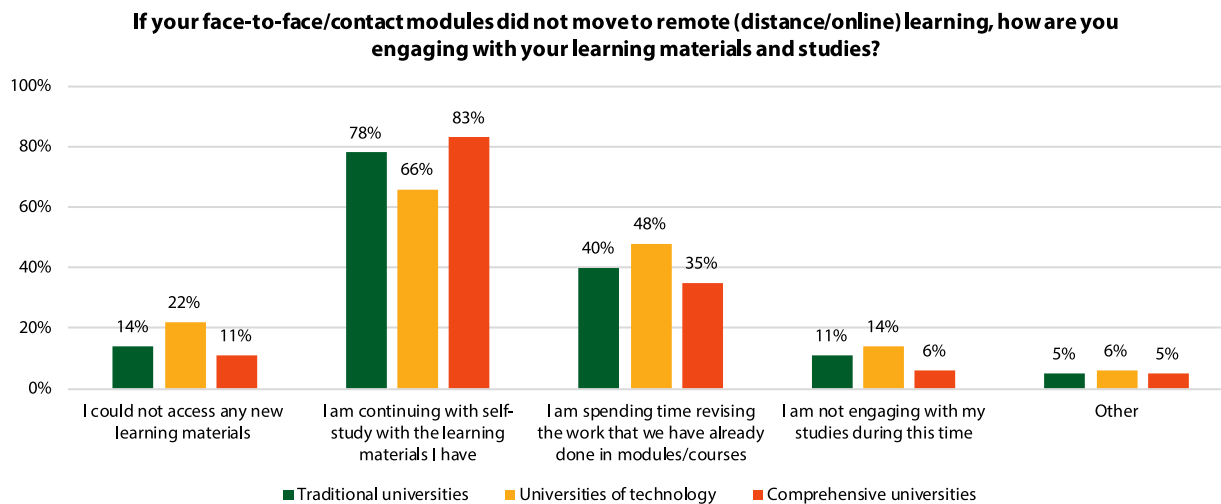
Figure 6 How students who did not move to remote learning are engaging with studies

For students who did not have modules that moved to remote learning, almost a quarter of those from UoTs could not access any new learning materials. The majority of students from all institutional types relied on self-study or revision, although some indicated that they were not engaging with their studies at all currently (Figure 6).
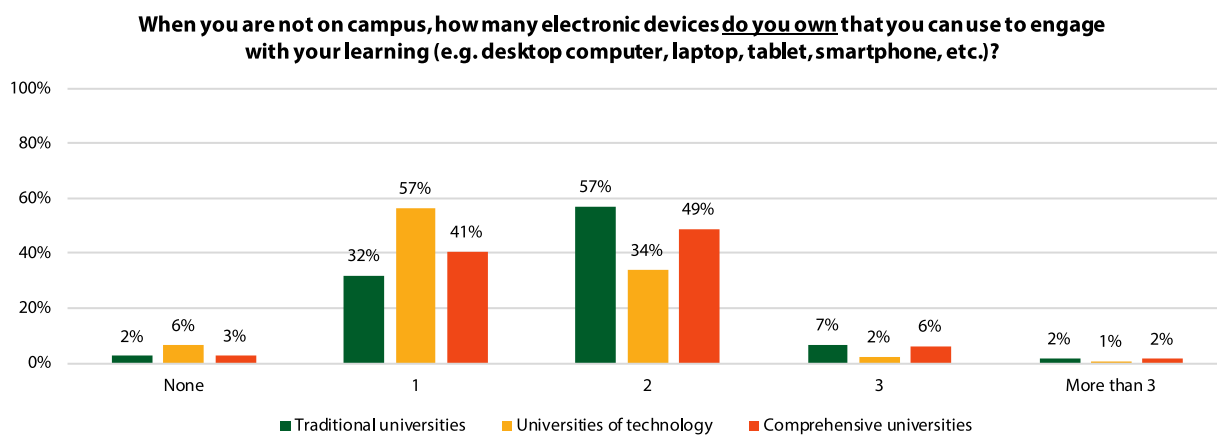
When you are not on campus, how many electronic devices do you own that you can use to engage with your learning (e.g. desktop computer, laptop, tablet, smartphone, etc.)?

Figure 7 Number of devices owned

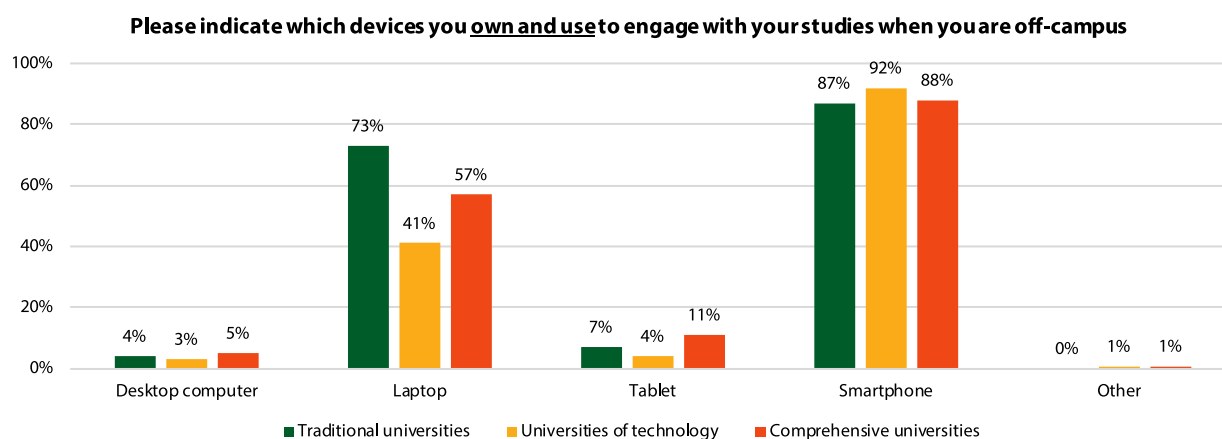**Please indicate which devices you own and use to engage with your studies when you are off-campus**

Figure 8 Type of devices students own

While the majority of students indicated that they had one to two devices to study with, there was quite a difference between UoT students and the other two university types, with the majority of UoT students relying on one device (57%; Figure 7). In addition, while around 90% of students from all types of institutions had access to smartphones, only 41% of UoT students owned laptops, compared to 73% of students from TU, and 57% of students from CUs (Figure 8).

Please indicate how you got your devices
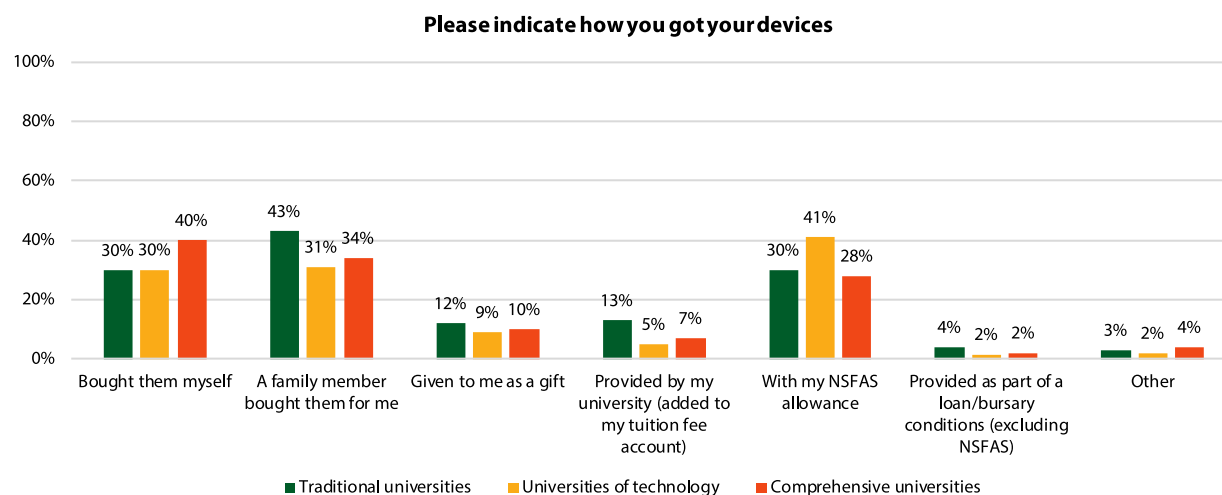
Figure 9 How students obtained devices

The majority of CU students bought devices for themselves (40%). For TU students, the majority's

91

devices were bought for them by family members (43%), and the majority of UoT students relied on their NSFAS allowance to buy their devices.
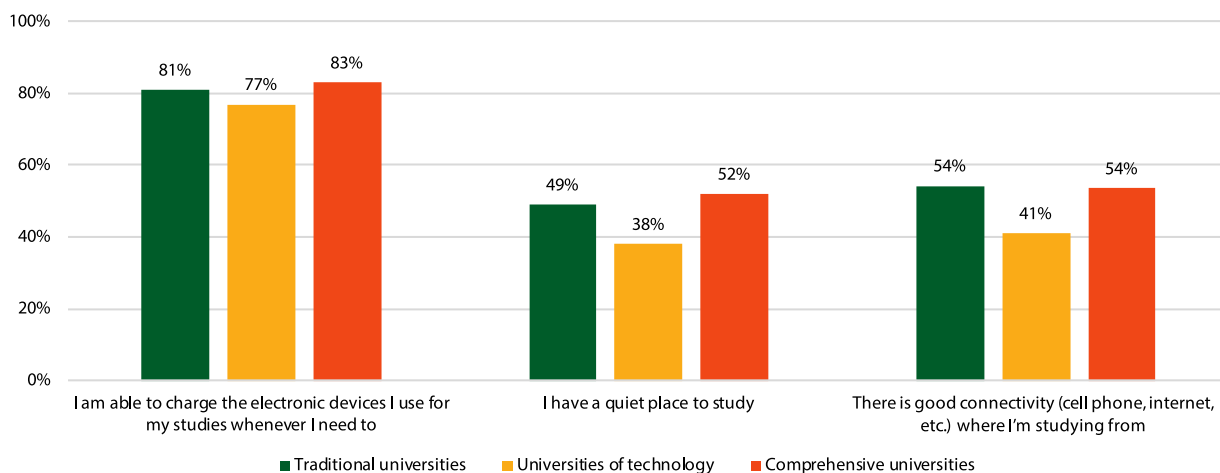

Figure 10 Enabling environment

Figure 10 shows that students from UoTs currently generally had a more difficult time finding a conducive environment to study in and getting connected.
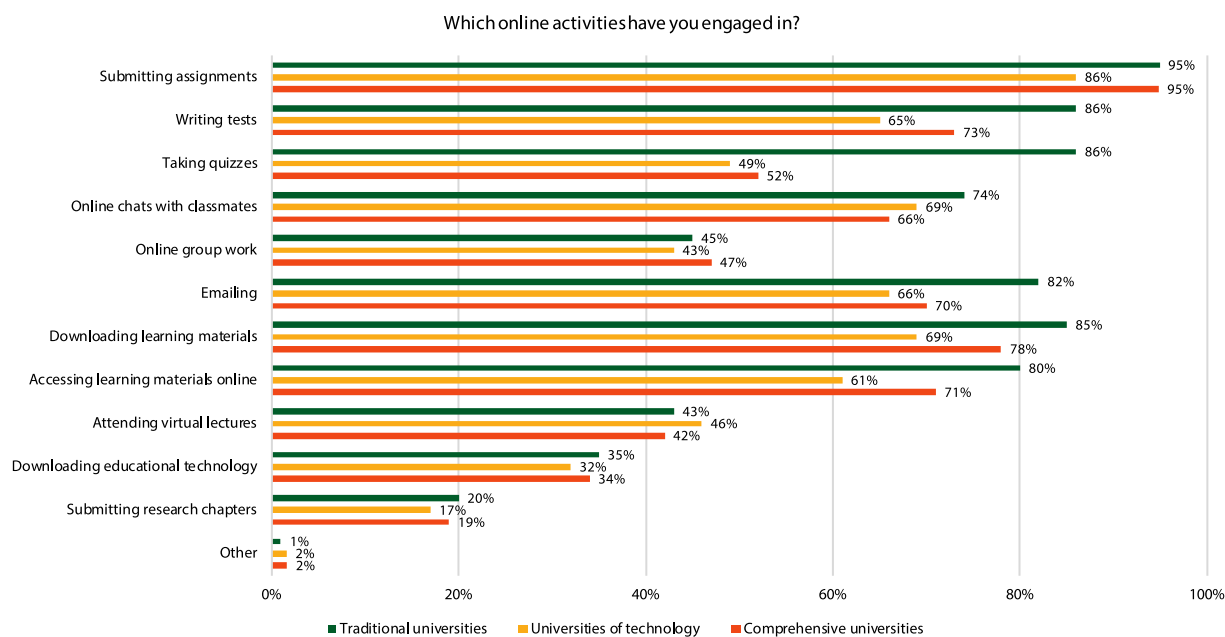

Figure 11 Online activities engaged in during the first semester

Figure 11 shows that students from TUs generally participated more in a range of online activities, including taking quizzes, engaging with classmates, emailing, and downloading learning materials. Students from all university types reported low engagement with virtual lectures, downloading educational technology and online group work. The lack of engagement in these activities could testify to some institutional approaches to keep remote learning low-tech because of the awareness of data and device challenges students had.
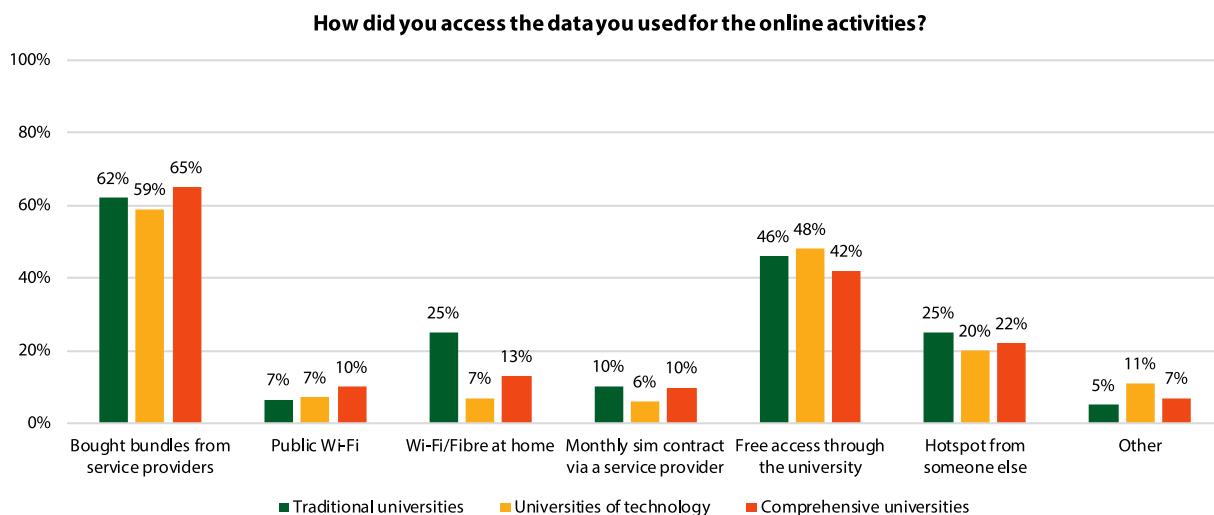
Figure 12 Accessing data

The majority of students from all institutions relied on data bundles from service providers, as well as the free access to selected websites that universities provided students (Figure 12). A quarter of students from TUs made use of Wi-Fi or fibre at home to gain access to their studies. Figure 13 shows that UoT students relied more on their NSFAS funding to pay for data they used, although students from all university types relied primarily on their family, friends and NSFAS contributions to pay for data in general.
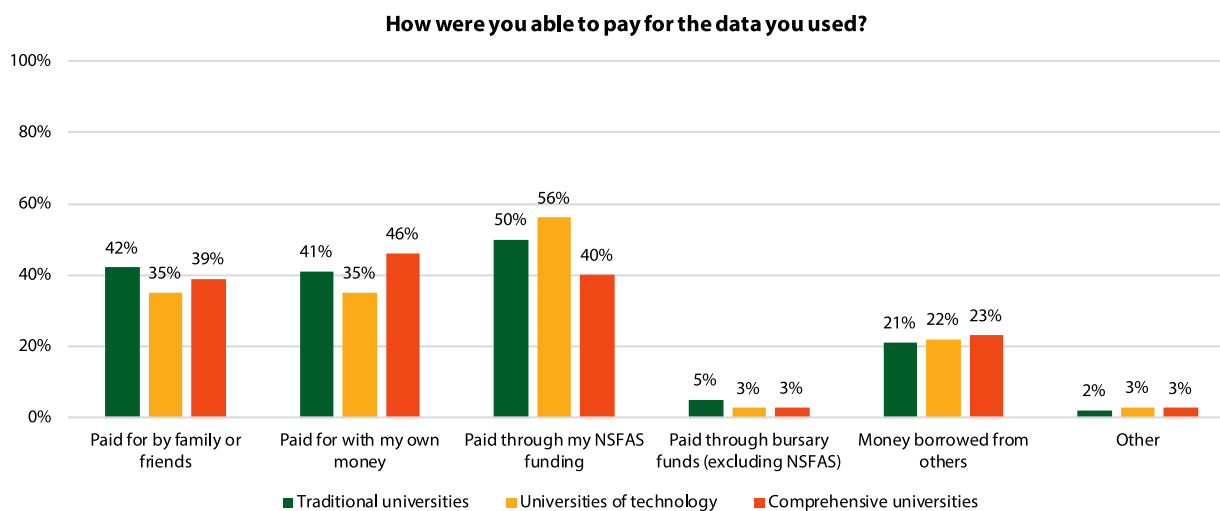
Figure 13 Paying for data

When asked about the quality of teaching and learning during remote learning, students from CUs and TUs were more satisfied than those from UoTs (Figure 14).
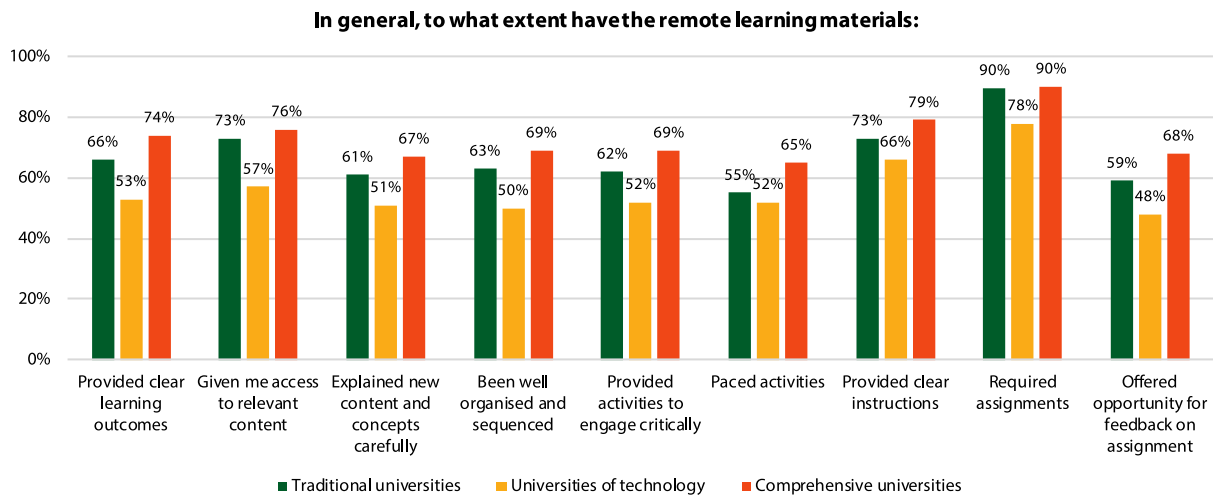
In general, to what extent have the remote learning materials:
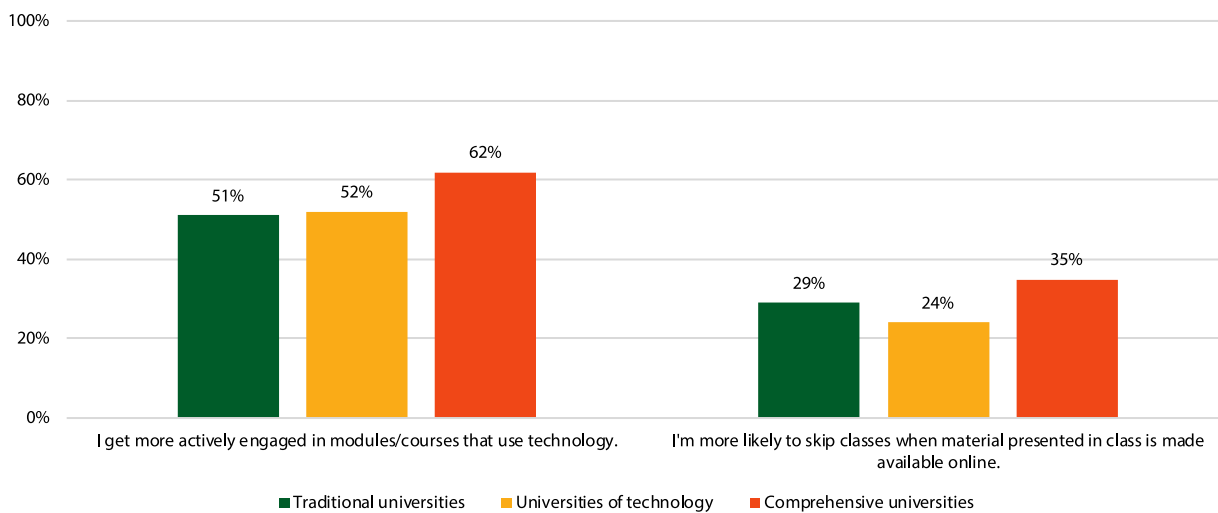

Figure 14 Quality of remote learning

Figure 15 Engagement with technology

Aligned with the distance data reported on earlier, students from CUs (particularly UNISA) seemed more comfortable with technology, arguably because they had been using technology more in their studies. Figure 15 shows that around half of students from TU and UoTs got more engaged in modules that use technology, while less than 30% said they were more likely to skip classes when material was available online.
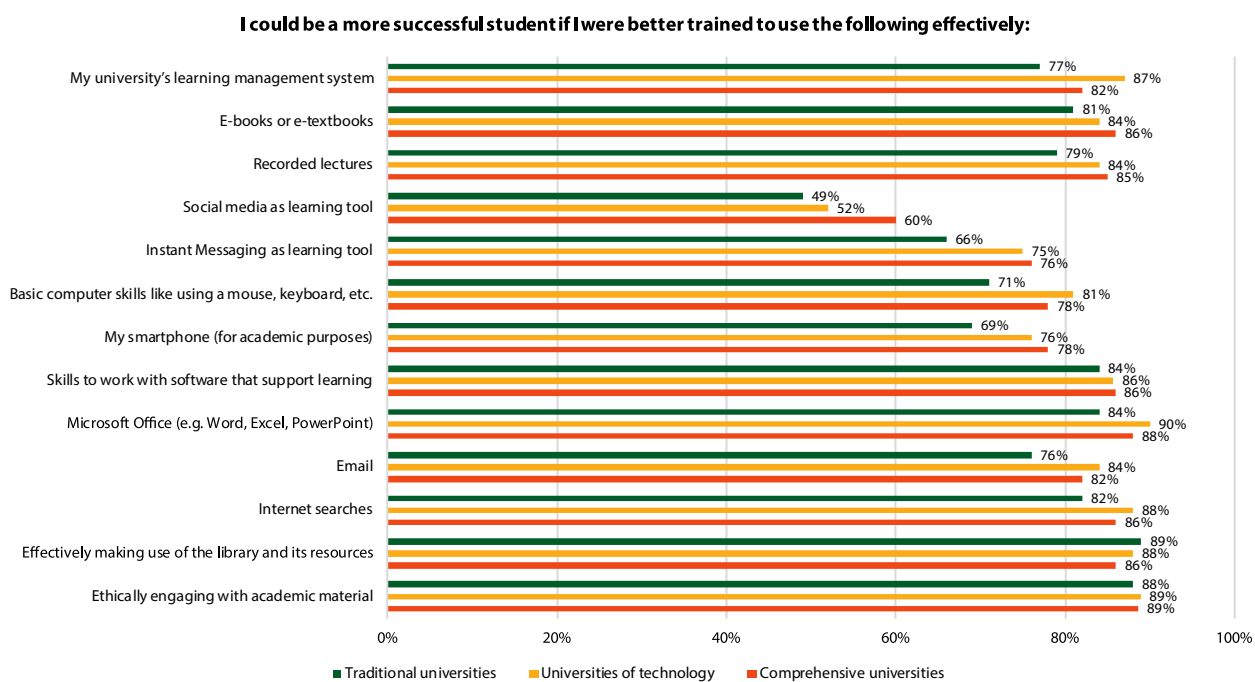
I could be a more successful student if I were better trained to use the following effectively:

Category	Traditional universities	Universities of technology	Comprehensive universities
My university's learning management system	77%	87%	82%
E-books or e-textbooks	81%	84%	86%
Recorded lectures	79%	84%	85%
Social media as learning tool	49%	52%	60%
Instant Messaging as learning tool	66%	75%	76%
Basic computer skills like using a mouse, keyboard, etc.	71%	81%	78%
My smartphone (for academic purposes)	69%	76%	78%
Skills to work with software that support learning	84%	86%	86%
Microsoft Office (e.g. Word, Excel, PowerPoint)	84%	90%	88%
Email	76%	84%	82%
Internet searches	82%	88%	86%
Effectively making use of the library and its resources	89%	88%	86%
Ethically engaging with academic material	88%	89%	89%

Figure 16 Digital skills needs

All students, regardless of institutional type, indicated that they would be more successful students if they were better trained in a range of technological engagements and skills (Figure 16).

Appendix 3: The SAULM survey

Students' Access to and Use of Learning Materials (SAULM) survey

Dear student,

The Department of Higher Education and Training (DHET) is conducting a survey to find out about your experiences in accessing learning materials. Your feedback is very important, particularly during the difficult time the sector, and country, is going through as a result of the Covid-19 pandemic. Universities were forced to transfer whole curriculums to online platforms, and have been scrambling to find out how they can help their students and staff access and use what they need to successfully complete modules. This survey therefore also asks about your experiences accessing your learning materials before, and during this time.

The feedback you provide is important because it helps the DHET plan how they distribute resources. This, in turn, feeds back into how we can make our students' educational experiences better. The DHET has contracted a team from the University of the Free State (UFS) to develop this survey and distribute the data.

The survey will take about 15-20 minutes to complete.

Some important considerations to note before you proceed:

1) The answers you provide to the questions here will form part of reports to DHET and universities. For these reports, your answers will be anonymised, which means that all students' answers are grouped together and no one will know what you said specifically. The results of this survey will also be used for academic purposes, for example, published in journals or shared at conferences. All data (survey responses) will also be anonymised for these purposes.

2) Some universities use survey data to link with other institutional data in order to better understand what their students are going through – and in turn, to identify where they can make educational experiences better. Any university that requests the student numbers of participants registered at their universities will enter into an agreement with the UFS to comply with the regulations stipulated by the Protection of Personal Information Act of 2013. This means that universities are only allowed to use the survey data you provide us here for the agreed purposes of educational improvement.

Should you agree that the UFS could share the information you provide here if your university asks for it, please fill in your student number here:

<u>**Please note that you do not have to provide your student number or any other personal information if you do not wish to do so. You can still complete the survey without providing a student number or other personal information.**</u>

3) As an incentive to participate in this research, we have a lucky draw, where 200 participants (randomly selected from all participating universities) will win R200 virtual Checkers vouchers (also redeemable at Shoprite or USave stores). The lucky draw will take place in the first week

of September, after which the winners will receive the virtual vouchers on their phones. If you would like to participate in the lucky draw, please provide us with a cellphone number:

<div style="border:1px solid black; width:50%; height:40px;"></div>

Please note that the UFS will not share your cellphone number with anyone else, including your university. You can still complete this survey even if you do not want to add your phone number.

4) We would like to follow up with students and staff later in the year to find out more about their experiences with remote (distance/online) teaching and learning. In order for us to link your pre-and post-responses, we need to ask for an identifier. If you agree for us to contact you later, please provide us with your email address:

<div style="border:1px solid black; width:50%; height:40px;"></div>

We will not use your email address for any other purpose and will not share personal information with anyone else, including your university. Please note that you can still complete this survey even if you do not want to add your email address.

5) Your participation in this survey is completely voluntary and you can stop participating at any stage without any consequences. You have to be 18 years or older to participate.

6) Should you have any questions about the survey, or any of the points listed here, or should you experience any emotional discomfort around the survey, please contact Dr Sonja Loots at lootss@ufs.ac.za.

By completing the survey I voluntary consent to participate and I understand what my participation involves.

Do you wish to participate?

O I choose to participate

O No, thank you

1) Demographics

1.1) At which university are you currently registered? (Mark only one)

O	Dropdown list of 26 South African public institutions

1.2) Which level of study are you enrolled for?
(IF PG SELECTED, ROUTE TO 1.4)

O	Undergraduate
O	Postgraduate

1.3) Is this your first year of study?

Yes	No

O	O

1.4) What type of qualification are you currently registered for?
(IF ANSWERED MASTER'S DEGREE (RESEARCH) OR PHD, ROUTE TO 1.4.1)

O	First or professional Degree (B.A., B.Sc., LLB, etc.)
O	B.Tech
O	Diploma
O	Occasional studies
O	Advanced Diploma
O	Extended Degree
O	Extended Diploma
O	Certificate of Higher Education studies
O	Honours level degree
O	Postgraduate certificate
O	Master's degree (course work)
O	Master's degree (research)
O	Doctoral degree
O	Not enrolled for Degree/Diploma purposes
O	Other specify

ONLY FOR RESEARCH POSTGRADS (MASTER'S RESEARCH; DOCTORAL)

1.4.1 Please indicate to what extent you agree with the following statements regarding access to learning materials in your postgraduate research degrees:

	Strongly disagree	Disagree	Agree	Strongly agree	Not applicable
a) I am able to access all the books I need for my research via the university library	O	O	O	O	O
b) I am able to access all the electronic readings I need for my research via the university library	O	O	O	O	O
c) I am able to use scholarly databases (such as EBSCO, SABINET, etc.) to find sources I need	O	O	O	O	O
d) I often download books without paying for them (e.g. through file share, torrent, etc.)	O	O	O	O	O
e) I often access e-resources via open access	O	O	O	O	O
f) The lockdown and Covid-19 responses negatively impacted my research	O	O	O	O	O
g) I had adequate access to my supervisors during the lockdown/Covid-19 response	O	O	O	O	O
h) I had adequate access to the university library resources during lockdown/Covid-19 response	O	O	O	O	O

1.5) Please indicate in which broad field of study you are registered. (Mark only one)

O	Economic and Management sciences
O	Humanities (incl. arts, social sciences, education, theology and law)
O	Health Sciences
O	Natural and Agricultural sciences (incl. mathematics, ICT, etc.)
O	Engineering and Manufacturing (incl. architecture, quantity surveying, fashion, etc.)
O	Tourism and hospitality (incl. other services)
O	Other specify

1.6) Please indicate your race. (Mark only one)

O	African
O	Asian
O	Coloured
O	Indian
O	White
O	Other
O	I prefer not to answer

1.7) What is your gender identity?

O	Male
O	Female
O	Another gender identity
O	I prefer not to answer

1.8) Please specify which of your family members have graduated from a university before you. (Mark all that apply.)

O	None, I will be the first
O	Father (Stepfather)/Guardian
O	Mother (Stepmother)/Guardian
O	Brother (Stepbrother)
O	Sister (Stepsister)
O	Other

1.9) Which of the following sources are you using to pay your educational expenses (tuition fees, books, room and board, etc.)? (Mark all that apply)

	Using	Not using	Not sure
a. Parent/guardian's money	O	O	O
b. My own money	O	O	O
c. Private sponsor/s (e.g. family contributors)	O	O	O
d. Employer	O	O	O
e. Non-governmental bursary (e.g. institutional, merit, private company)	O	O	O
f. Governmental bursary (excluding NSFAS)	O	O	O
g. NSFAS	O	O	O
h. Loan (including institutional, banks, or private companies)	O	O	O

1.10) How many of your modules/courses were moved to remote (distance/online) teaching and learning during the first semester of 2020?
(IF STUDENTS SELECT ANY OF THE NONE OPTIONS, SOME FURTHER QUESTIONS ARE ROUTED TO A DIFFERENT SET OF QUESTIONS ENQUIRING ABOUT GENERAL ENGAGEMENT WITH LEARNING MATERIALS AND TECHNOLOGY – THESE QUESTIONS ARE ADDED IN ORANGE. THOSE ANSWERING NOT APPLICABLE, I AM AN M OR PHD STUDENT, ROUTE TO 3)

O	None, I'm already studying remotely
O	None, my modules/ courses were not moved to remote learning
O	Not applicable, I am a Master's (research) or Doctoral student
O	1-2
O	3-4
O	5-6
O	7 or more

1.11) Which province have you been based in most of the time while engaging in remote (distance/online) teaching and learning?

O	Dropdown list of SA provinces
O	I am not in South Africa

1.12) Which village/town/city in that province have you spent the most time in during remote teaching and learning?
(ROUTED QUESTION – IF ANSWERED SA PROVINCE IN 1.11; OTHERWISE WHICH COUNTRY HAVE YOU SPENT THE MOST TIME IN DURING REMOTE T&L)

2) Access to and use of study materials

Thinking of the first semester of 2020:

2.1) How many of your modules have prescribed textbooks?
(ROUTE TO 2.6 IF ANSWERED NONE)

O	None
O	1-2
O	3-4
O	5 or more

2.2) How many of the prescribed textbooks indicated in 2.1 did you buy?
(ROUTE TO 2.5 IF ANSWERED NONE)

O	None
O	1-2
O	3-4
O	5 or more

2.3) How much money on average did you spend on all your prescribed textbooks?

O	Between R1 and R500
O	Between R501 and R1500
O	Between R1501 and R2500
O	Between R2501 and R3500
O	More than R3501

2.4) Where did you buy the prescribed textbooks ?(Mark all that apply)

O	New, from a campus bookstore
O	New, from a bookstore off campus
O	Second-hand from a bookstore on campus
O	Second-hand from a bookstore off campus
O	Second-hand from a friend or fellow student
O	Bought it online in hard copy (e.g. through Takealot, Loot, or online bookstores)
O	Bought it online and downloaded it (e-copy)
O	Other, specify

2.5) If you did not buy the prescribed textbooks yourself, how did you get access to them? (Mark all that apply)

O	I could not get access to prescribed textbooks that I did not buy
O	I borrowed prescribed textbooks from friends/class-mates
O	My friends/classmates and I put our money together to pay for a prescribed textbook and then we shared it
O	I downloaded the prescribed textbooks for free (e.g. through file share, torrent, etc.)
O	I downloaded the prescribed textbooks for free(e.g. through open access)
O	I accessed prescribed textbooks online without downloading them
O	I made copies from others'/library's prescribed text-books
O	I borrowed prescribed textbooks from the library
O	I accessed earlier versions of the prescribed textbooks
O	Other, please specify

ITEM TO BE GIVEN IF RESPONDENTS SELECTED I COULD NOT GET ACCESS TO PRESCRIBEDTEXTBOOKS I DID NOT BUY FOR ITEM 2.5.

Please indicate the reason/s why you could not access a prescribed textbook through any of the ways listed in 2.5.

2.6) Please provide the main reason why you would choose not to buy a prescribed textbook, even if you had the money.

O	Prescribed textbooks are too expensive
O	If we do not use the whole prescribed textbook, it is not worth buying
O	Older versions of the prescribed textbook are good enough to use
O	I can make copies of relevant chapters
O	Prescribed textbooks are available in the library
O	I will always choose to buy prescribed textbooks
O	Other, please specify

2.7)Did any of your modules/ courses make use of any other learning materials beyond pre-scribed textbooks (e.g. other readings, lecturers' notes, interactive activities, etc.)?

O	Yes
O	No

2.8) Which other learning materials did your modules/ courses make use of? (Mark all that apply)

O	Academic publications or other readings
O	Tests from previous years
O	Quizzes or other interactive activities
O	Study guides
O	Lecturers' notes (slides, summaries, etc.)
O	Links to external websites
O	Online videos
O	(Not-prescribed) textbooks freely available from the internet
O	Other, please specify

2.9) How did you access the learning materials listed in 2.8(excluding prescribed textbooks) before the end of March 2020?(Mark all that apply)

O	I could not access learning materials during January, February or March
O	Through copies provided by my university or a lectur-er
O	By downloading them from the internet (e.g. through file share, torrent, etc.)
O	By downloading them from the internet(e.g. through open access)
O	By downloading them from the learning manage-ment system (e.g. Blackboard, Moodle,RUconnected, Vula, Sakai, etc.)
O	Got them from friends/classmates
O	Got them from students who completed the modules in previous years
O	Other, please specify

Please indicate the reason/s why you could not access learning materials through any of the ways listed in 2.9.

2.10) How did you access learning materials listed in 2.8 (excluding prescribed textbooks) during remote teaching and learning? (Mark all that apply.)

O	I could not access learning materials during this time
O	Through printed copies provided by your university or lecturer delivered to you
O	Through printed copies provided by your university or lecturer made available for collection
O	By downloading them from the internet (e.g. through file share, torrent, etc.)
O	By downloading them from the internet (e.g. through open access)
O	By downloading them from the learning management system (e.g. Blackboard, Moodle, RUconnected, Vula, Sakai, etc.)
O	Got them from friends/classmates
O	Got them from students who completed the modules/ courses in previous years
O	Other, please specify

ITEM TO BE GIVEN IF RESPONDENTS SELECTED I COULD NOT GET ACCESS TO LEARNING MATERIALS DURING THIS TIME

Please indicate the reason/s why you could not access a prescribed textbook through any of the ways listed in 2.10.

2.10) If your face-to-face/contact modules did not move to remote (distance/online) learning, how are you engaging with your learning materials and studies?

O	I could not access any new learning materials
O	I am continuing with self-study with the learning materials I have
O	I am spending time revising the work that we have already done in modules/ courses
O	I am not engaging with my studies during this time
O	Not applicable, I am already a remote learning student
O	Not applicable, I am a postgraduate research student
O	Other, please specify

3) Access to and use of devices and educational technology

3.1) When you are not on campus, how many electronic devices do you own that you can use to engage with your learning(e.g. desktop computer, laptop, tablet, smartphone, etc.)?

O	None
O	1
O	2
O	3
O	More than 3

3.2) Please indicate which devices you own and use to engage with your studies when you are off-campus (Mark all that apply)

O	Desktop computer
O	Laptop
O	Tablet
O	Smartphone
O	Other, please specify

3.3) Please indicate how you got the devices you indicated in 3.1 and 3.2 (Mark all that apply)

O	Bought them myself
O	A family member bought them for me
O	Given to me as a gift
O	Provided by my university (added to my tuition fee account)
O	With my NSFAS allowance
O	Provided as part of a loan/bursary conditions (excluding NSFAS)
O	Other, please specify

3.4) If you do not own any devices, but still have access to one or more devices to engage with your studies off-campus, which devices do you have access to? (Mark all that apply)

O	Desktop computer
O	Laptop
O	Tablet
O	Smartphone
O	Other, please specify

3.5) If you do not own any devices, but still have access to one or more devices to engage with your studies off-campus, how do you get access to these devices? (Mark all that apply)

O	Borrow devices from family members
O	Borrow devices from friends/fellow students
O	On loan from my university
O	Rent devices
O	Internet cafe
O	Public library
O	Employer
O	Other, please specify

3.6) During the period of remote (distance/online) learning in the first semester:

3.6.1) Please indicate which of the following statements are true regarding your studies during remote (online/distance) learning:

	Yes	No	Not applicable
a. I am able to charge the electronic devices I use for my studies whenever I need to	O	O	O
b. I have a quiet place to study	O	O	O
c. There is good connectivity (cellphone, internet, etc.) where I'm studying from	O	O	O

3.6.2) Which online activities have you engaged in? (Mark all that apply)

O	Submitting assignments
O	Writing tests
O	Taking quizzes
O	Participating in online chats with classmates (including WhatsApp or other platforms)
O	Participating in online group work
O	Emailing
O	Downloading learning materials (videos, audio files; lecture slides, etc.)
O	Accessing learning materials online (videos, lectures, slides, etc.)
O	Attending virtual lectures
O	Downloading educational technology, software or apps to enable learning
O	Submitting research chapters
O	Other, please specify

3.6.3) In general, how easy is it to engage with academic activities such as assignments, tests, or working with learning materials using the following devices?

	Very difficult	Somewhat difficult	Easy	Very easy	I have not used this device for academic purposes
Desktop computer	O	O	O	O	O
Laptop	O	O	O	O	O
Tablet	O	O	O	O	O
Smartphone	O	O	O	O	O
Another device, please specify	O	O	O	O	O

3.6.4) How often have you been engaging in the activities listed in 3.6.1?

O	Daily
O	Every second or third day
O	Once a week
O	Only once per module
O	I did not engage in any of these activities
O	Other, please specify

3.6.5) Approximately how much data have you used on the activities listed in 3.6.1?

O	Less than 500 megabytes
O	500 megabytes to 2 gigabytes
O	2-4 gigabytes
O	4-6 gigabytes
O	More than 6 gigabytes
O	Not sure, I used free data via the university
O	Not sure, I used free data through another source (other than the university)
O	Not sure, I did not keep track

3.6.6) How did you access the data you used in 3.6.4? (Mark all that apply)

O	Bought bundles from service providers (e.g. Vodacom, MTN, Telkom, Cell C, etc.)
O	Public Wi-Fi
O	Wi-Fi/Fibre at home
O	Monthly sim contract via a service provider
O	Free access through the university

O	Hotspot from someone else
O	Other, please specify

3.6.7)Did you have to make a plan to pay for the data you used in 3.6.4?

O	Yes
O	No
O	Only for some of the data

3.6.8) How were you able to pay for the data you used? (Mark all that apply)

O	Paid for by family or friends
O	Paid for with my own money
O	Paid through my NSFAS funding
O	Paid through bursary funds (excluding NSFAS)
O	Money borrowed from others
O	Other, please specify

3.6) Have you engaged in online teaching and learning activities during your time at university?

O	Yes
O	No

3.6.1) Which online activities have you engaged in during your time at university? (Mark all that apply)

O	Submitting assignments
O	Writing tests
O	Taking quizzes
O	Participating in online chats with classmates (including WhatsApp or other platforms)
O	Participating in online group work
O	Emailing
O	Downloading learning materials (videos, audio files, lecture slides, etc.)
O	Accessing learning materials online (videos, lectures, slides, etc.)
O	Attending virtual lectures
O	Downloading educational technology, software or apps to enable learning
O	Submitting research chapters

O	Other, please specify

3.7) How often have you engaged in the activities listed in 3.6?

O	Daily
O	Every second or third day
O	Once a week
O	Only once per module/ course
O	Other, please specify

3.8) When you are off-campus, about how much data do you use on the activities listed in 3.6 in an average month?

O	Less than 500 megabytes
O	500 megabytes to 2 gigabytes
O	2-4 gigabytes
O	4-6 gigabytes
O	More than 6 gigabytes
O	Not sure, I do not keep track

3.9) How do you access the data you use for engaging in academic activities off-campus? (Mark all that apply)

O	Buy bundles from service providers (e.g. Vodacom, MTN, Telkom, Cell C, etc.)
O	Public Wi-Fi
O	Wi-Fi/Fibre at home
O	Monthly sim contract via a service provider
O	Hotspot from someone else
O	Free access through the university
O	Other, please specify

3.10) How are you able to pay for the data you use to engage with your studies off-campus? (Mark all that apply)

O	Paid for by family or friends
O	Paid for with my own money
O	Paid through my NSFAS funding
O	Paid through bursary funds (excluding NSFAS)
O	Money borrowed from others
O	Other, please specify

3.6.9) In general, to what extent have the remote learning materials:

	Very much	Quite a bit	Some	Very little	Not applicable
a. Provided clear learning outcomes or objectives	O	O	O	O	O
b. Given me access to content that is relevant to the learning outcomes	O	O	O	O	O
c. Explained new content and concepts carefully, using examples or illustrations to explain difficult points	O	O	O	O	O
d. Been well organised and sequenced in a way that makes sense	O	O	O	O	O
e. Provided activities which encourage me to engage with the content critically	O	O	O	O	O
f. Paced activities so I have a reasonable amount of time to complete them	O	O	O	O	O
g. Provided clear instructions and used a level of language that was easy for me to follow	O	O	O	O	O
h. Required me to complete and submit assignments	O	O	O	O	O
i. Offered me an opportunity for feed-back on the assignment	O	O	O	O	O

3.7) I get more actively engaged in modules/courses that use technology.

O	Never true
O	Sometimes true
O	Often true
O	Very often true
O	Not applicable

3.8) I'm more likely to skip classes when material presented in class is made available online.

O	Never true
O	Sometimes true
O	Often true
O	Very often true
O	Not applicable

3.9) When I started University, I was well prepared to use technology needed in my modules/ courses.

O	Strongly disagree
O	Disagree
O	Agree
O	Strongly agree

	O	Not applicable

3.10) I could be a more successful student if I were better trained to use the following effectively:

	Strongly disagree	Disagree	Agree	Strongly agree	Not applicable
3.10.1) My university's learning management system (e.g. Blackboard, Moodle,RUconnected, VulaSakai, etc.)	O	O	O	O	O
3.10.2) E-books or e-textbooks	O	O	O	O	O
3.10.3) Recorded lectures	O	O	O	O	O
3.10.4) Social media (e.g. Facebook, Twitter, etc.) as a learning tool	O	O	O	O	O
3.10.5) Instant Messaging (e.g. WhatsApp, Telegram, etc.) as a learning tool	O	O	O	O	O
3.10.6) Basic computer skills like using a mouse, keyboard, etc.	O	O	O	O	O
3.10.7) My smartphone (for academic purposes)	O	O	O	O	O
3.10.8) Skills to work with software or technology developed to support learning (e.g. educational games, interactive activities, etc.)	O	O	O	O	O
3.10.9) Microsoft Office (e.g. Word, Excel, PowerPoint)	O	O	O	O	O
3.10.10) Email	O	O	O	O	O
3.10.11) Internet searches	O	O	O	O	O
3.10.12) Effectively making use of the library and its resources	O	O	O	O	O
3.10.13) Ethically engaging with academic material (e.g. referencing, plagiarism, etc.)	O	O	O	O	O

4) Perceived impact

4.1) What are some of the challenges you experience with technology and learning?

4.2) What are some of the benefits/positive things you experience with technology and learning?

Appendix 4: Institutional POPIA agreement

UNIVERSITY OF THE
FREE STATE
UNIVERSITEIT VAN DIE
VRYSTAAT
YUNIVESITHI YA
FREISTATA
UFS

INFORMATION REQUEST

INFORMATION SCHEDULE:

INFORMATION OF HIGHER EDUCATION INSTITUTION

established under the Higher Education Act 101 of 1997

FULL NAME OF INSTITUTION: _____

PHYSICAL ADDRESS: _____
_____

POSTAL ADDRESS: _____

_____

PURPOSE OF REQUEST: The identifiable data obtained from the UFS in accordance with this request form, will align with preconditions of third-party sharing of data as outlined by the Protection of Personal Information Act 4 of 2013. This includes the precondition that further processing of data needs to align with the original intent the data was collected for. In this case, it would refer to processing data with the intent to enhance students' educational experience at the respective Institution identified above.

1. DEFINITIONS

The following words shall have the meanings set out opposite them and capitalised terms used throughout this document shall have a corresponding meaning:

1.1. **"Request"** means this information request submitted by the Institution to the UFS;

1.2. **"Data Subject"** means a student registered at the Institution and who participated in the Survey and consented to his/her Personal Information being Processed in the manner and for the purpose as set out herein;

1.3. **"DHET"** means the Department of Higher Education and Training;

1.4. **"Identifiable Information"** means information that includes the Personal Information of students, who have consented thereto when participating in the Survey;

1.5. **"Information Schedule"** means the information schedule attached to the front of this document and which contains key reference information regarding this Request Form and forms a vital part thereof;

1.6. **"Institution"** means the Institution as identified in the Information Schedule and who is requesting

the Identifiable Information of its students,

1.7. **"Personal Information"** means any information relating to an identifiable, living natural person and if applicable, to an existing identifiable juristic person as defined in section 1 of POPIA, and which includes, but is not restricted to, personal, identifying, contact, residential, financial, medical, biometric, correspondence, criminal, educational, employment and behavioural information, as well as any assessments, student numbers, evaluations and interpretations in respect of any of the aforesaid and further within the context of this Request it applies to any Identifiable Information of the Institution's students who participated in the Survey;

1.8. **"POPIA"** means the Protection of Personal Information Act 4 of 2013;

1.9. **"Processing"** means any operation or activity or any set of operations, whether or not by automatic means, concerning Personal Information, including –

a). the collection, receipt, recording, organisation, collation, storage, updating or modification, retrieval, alteration, consultation or use;

b). dissemination by means of transmission, distribution or making available in any other form; or

c). merging, linking as well as restriction, degrada-

tion, erasure or destruction of information,

and **"Process"** has the corresponding meaning;

1.10. **"Purpose"** means the purpose for which the Institution requests access to Identifiable Information as set out in the Information Schedule;

1.11. **"Survey"** means the Students' Access to and Use of Learning Materials survey conducted by the UFS on behalf of the DHET; and

1.12. **"UFS"** means the University of the Free State, a university duly established under the Higher Education Act No 101 of 1997 with its address at Nelson Mandela Drive, Bloemfontein, 9300, Republic of South Africa.

2. **RECORDAL**

It is recorded that-

2.1. the UFS has conducted the Survey on behalf of the DHET and gathered aggregate data relating to students registered at 24 (TWENTY-FOUR) universities across South Africa;

2.2. as part of the Survey, the UFS has also collected certain Identifiable Information of students, which was obtained with the prior express consent of the participating students in question;

2.3. the Institution has requested that the UFS provide it with the Identifiable Information regarding the Institution's students, which information may constitute Personal Information in terms of POPIA, for the Purpose as specified in the Information Schedule; and

2.4. the Institution hereby records its obligations in respect of the Processing of Personal Information in terms of POPIA and agrees to the terms as set out herein.

3. **PURPOSE AND AIM**

It is recorded that the purpose and aim of this Request is as follows:

3.1. This Request aims to ensure that the Institution complies with the relevant provisions of the Protection of POPIA when Processing Personal Information gathered by the UFS in respect of the Institution's students who participated in the Survey.

3.2. The Institution shall endeavour to comply with the provisions of POPIA when Processing the Personal Information in order to achieve the Purposes as described in the Information Schedule above and to ensure the protection and confidentiality of the Personal Information as far as reasonably possible.

3.3. By lodging this request, the Institution undertakes to Process its Personal Information in the manner as set out herein.

4. **UNDERTAKING**

The Institution undertakes and warrants that -

it will Process the Personal Information only for the Purpose agreed on in the Information Schedule;

it will treat the Personal Information which comes to its knowledge as confidential and will not disclose it to any third parties unless required by law or in the course of the proper performance of its duties in terms of this Request;

it has no reason to believe that the legislation applicable to it prevents it from fulfilling the instructions received from the UFS and its obligations under this Request and such legislation provides an adequate level of protection in accordance with section 72 of POPIA;

it has implemented the technical and organisational security measures specified by the Institution for the ethical use of data and Processing of Personal Information in line with POPIA for purposes of Processing the Personal Information of its students;

The Institution hereby undertakes to and shall procure that it fully complies with the provisions of POPIA and all other applicable legislation and regulatory requirements in connection with or which are relevant to the performance of its obligations and exercise of its rights under this Agreement.

5. **LIABILITY**

5.1. The Institution acknowledges that, in terms of the provisions of POPIA, any data subject who has suffered damage as a result of any breach of the obligations referred to in paragraph 4 (Undertaking), is entitled to claim compensation from the Institution for the damage suffered.

5.2. The Institution agrees to indemnify and hold the UFS harmless at all times against any and all losses, damages or claims sustained by the UFS resulting from the Institution's breach of the provisions of paragraph 4 (Undertaking) or any failure to comply with the provisions of POPIA irrespective of whether or not there is intent or negligence on the part of the Institution.

***

Thus done and signed at _____ on this_____ day of _____ 20___

As witnesses:

_____

_____   _____
For and on behalf of
THE INSTITUTION
by
Name: _____

Designation: _____

NOTES