

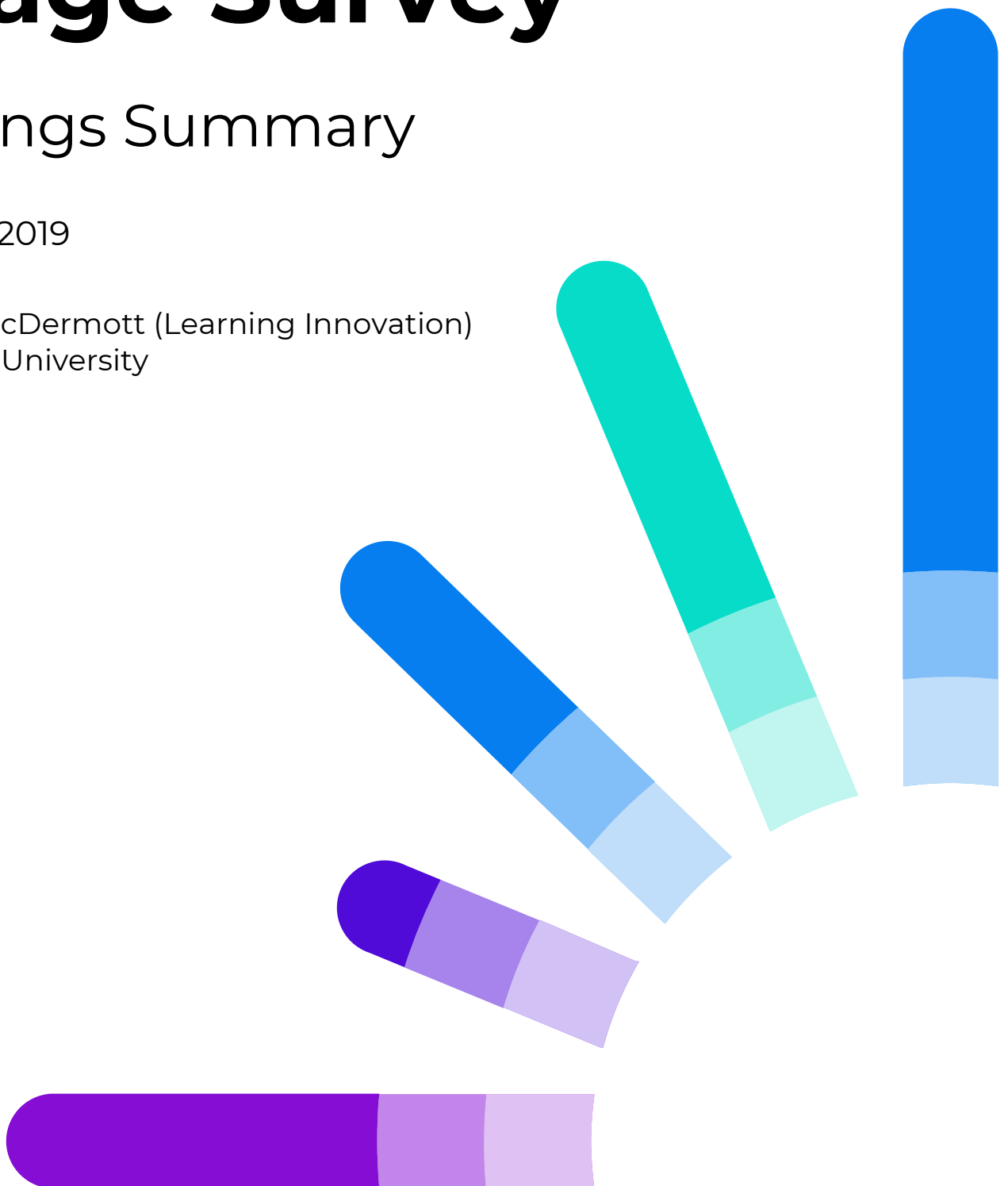
Learning
Innovation

Student Device Usage Survey

Findings Summary

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Findings Summary

Prepared by Andrew McDermott (Learning Innovation)

Introduction

The initial purpose of the student device usage survey was to provide some current, relevant data to help guide the early phases of a smart technology project to further investigate the potential benefits and impact of smart devices on student success.

With ever-reducing prices, the offer of greater-than-ever capability, and the recent ubiquity of Wi-Fi and mobile data, device usage since 2008 has been on an upward trajectory. The uptake of the range of technologies available on the market, such as smartphones, tablets, smart devices, and consoles has been rapid as users continually look to simplify and enhance their experiences; to be more productive and still improve quality; to be more connected and yet less distracted.

The services Higher Education students are utilising in their day-to-day lives for entertainment, social networking, and communication are directly tied into the numerous devices they use. This seamless experience saves them time and energy and allows them to pick up content, notifications, and updates across ecosystems quickly and easily. The question is how long it will take for this expectation of a seamless experience to be applied by students to how they study and access educational materials on their devices.

Survey findings

Student Device Usage Survey

To further our understanding of this area we ran a short survey with the Curriculum Design Student Panel to ask students a set of questions about their device ownership and usage.

456 students responded fully, which is a response rate of around 16%. Their answers (Appendices A and B) provide an insight into the types of devices they have access to, which of these they use regularly for study and why, and which they would like to use more. It also provides us an insight into the potential devices that The Open University could target more use of in the future.

Access to and usage of devices

One of the key issues explored by the survey was what devices students have access to. The device types included were: PCs/laptops, tablets, smartphones, smart devices (including speakers, screens, TVs and streaming devices), games consoles, and VR headsets, as well as providing an 'other' category for anything that did not fit these options.

The survey specifically sought to differentiate between access and usage, so as not to conflate ownership or access with personal usage. This is an important difference, as many Open University students will have access to devices in their household, for example a games console belonging to one of their children, but will not ever use that device of their own accord.

The responses demonstrated a wider variety of devices among students than anticipated. While the traditional and well utilised devices for study purposes were well represented (89% of students have access to a laptop and 91% to a smartphone), it is the access to smart devices which is greater than we would have expected given the devices used to access current OU services. Figure 1 breaks down the various device types.

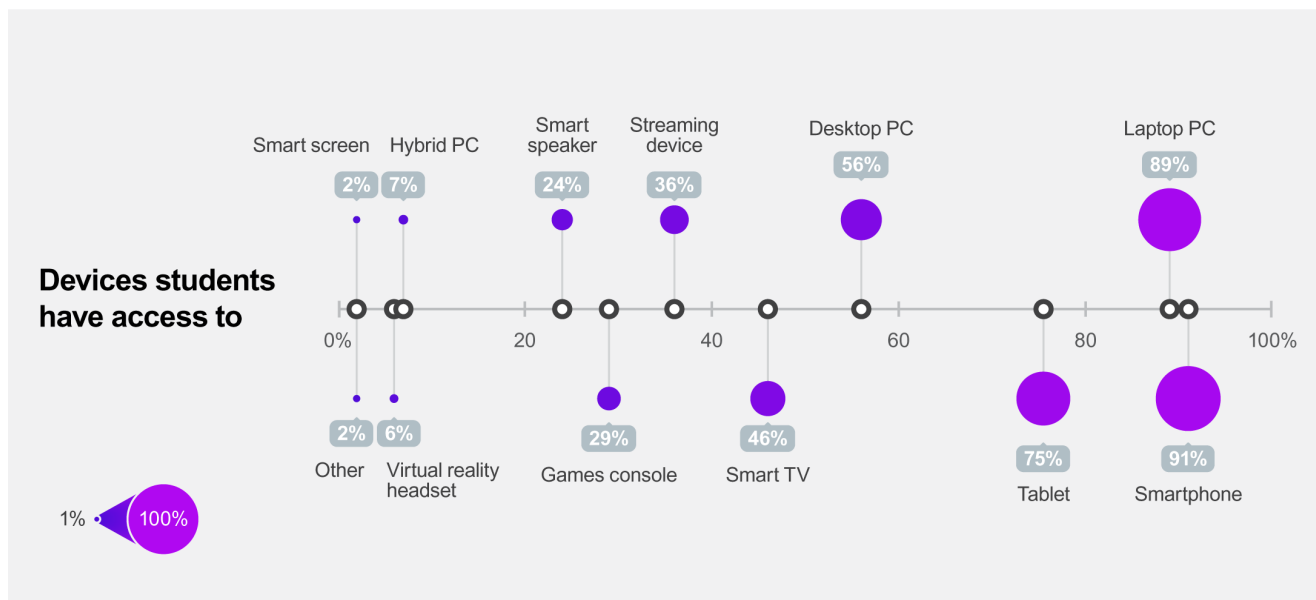


Figure 1 Device types that students own or have access to

When looking specifically at device usage, the survey found that 89% of respondents regularly use a smartphone and a similar number (84%) use a laptop (Figure 2). More respondents use a tablet (63%) than a desktop (47%).

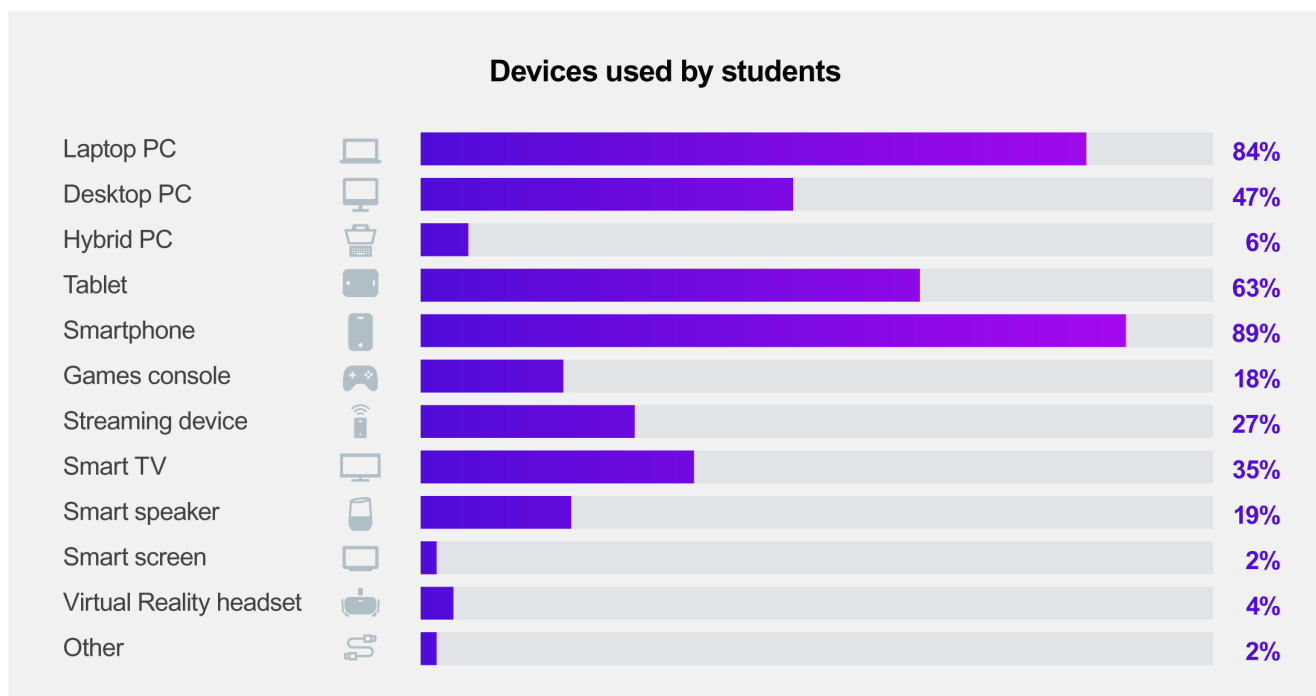


Figure 2 Device types that students use

When looking at the data for smart devices in general, a significant number of respondents are also now using a smart TV, streaming device, or smart speaker. There is also a good percentage of respondents that have access to (>25%) or use a games console on a regular basis (18%). However, none of the students responding to the survey reported using a games console for study purposes.

Device usage for study

The survey asked students about their device usage specifically for study purposes. The traditional devices used for study were again very well represented, although the shift to laptops over desktops is evident with twice as many respondents using a laptop (80%) than a desktop (40%).

Interestingly, almost the same number of students (44%) now use a smartphone for study as they do a tablet (46%). The number of students currently utilising smart devices for study is, in the main, either low or non-existent (Figure 3).

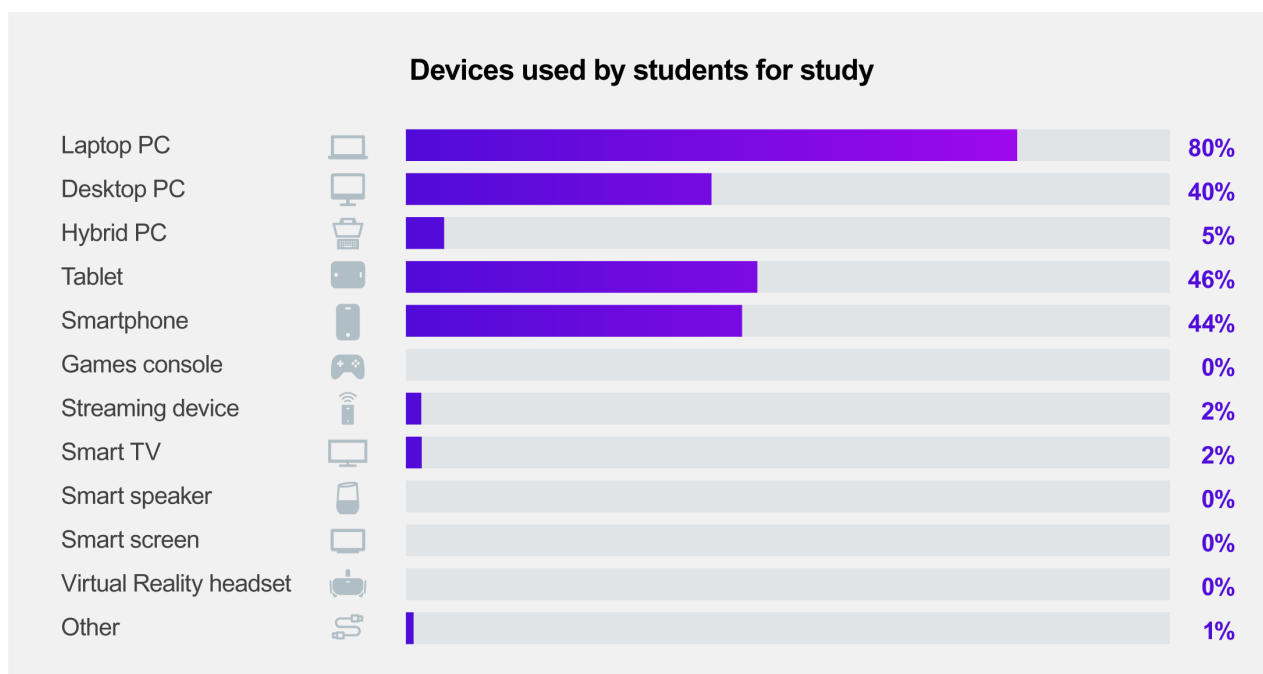


Figure 3 Device types that students use for study purposes

When comparing general usage against usage for study, the findings from the survey are striking. For example, smart speakers are used by a fifth of respondents, but not for study, matching games consoles. Interestingly, 40% of respondents (Figure 4) told us that they can't study on certain devices because our learning materials either aren't available to use on that device (i.e. they cannot be accessed or materials are not in the correct format) or their module software is not compatible with the device. Only 9% of respondents cited lack of availability of a device as a reason for not using a device for study, and only 15% cited connectivity as an issue.

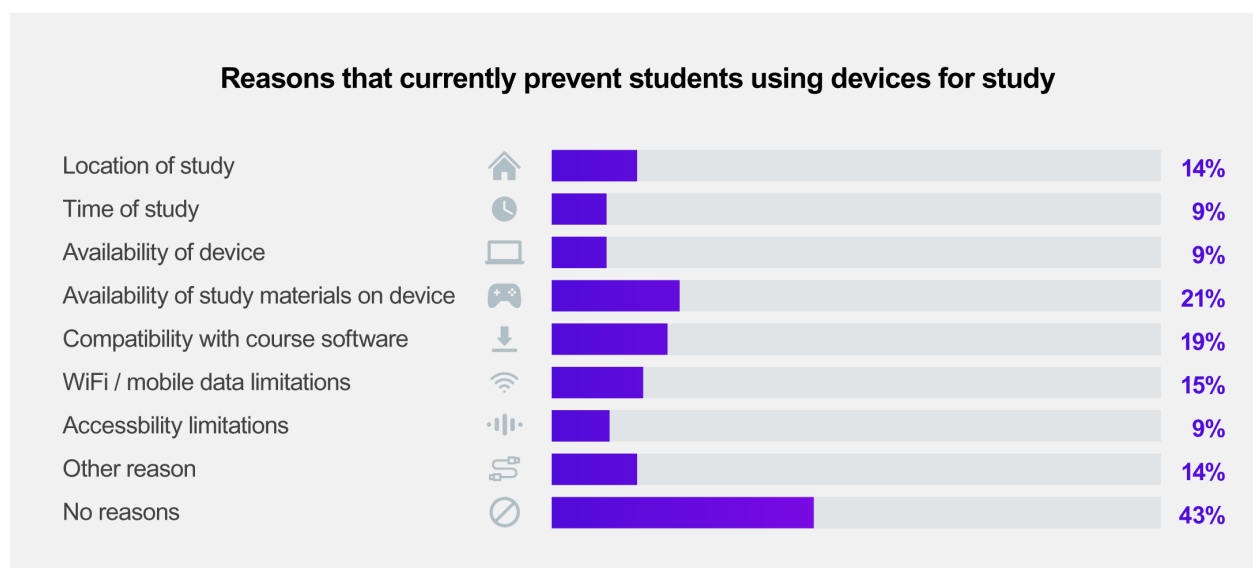


Figure 4 Reasons preventing students from using devices for study

Almost half (43%) of respondents stated that although they do not use devices to study there were no reasons preventing them. This suggests an area needing further examination to understand if students are not aware of the opportunities around using different devices for study, or additional factors have not yet been identified.

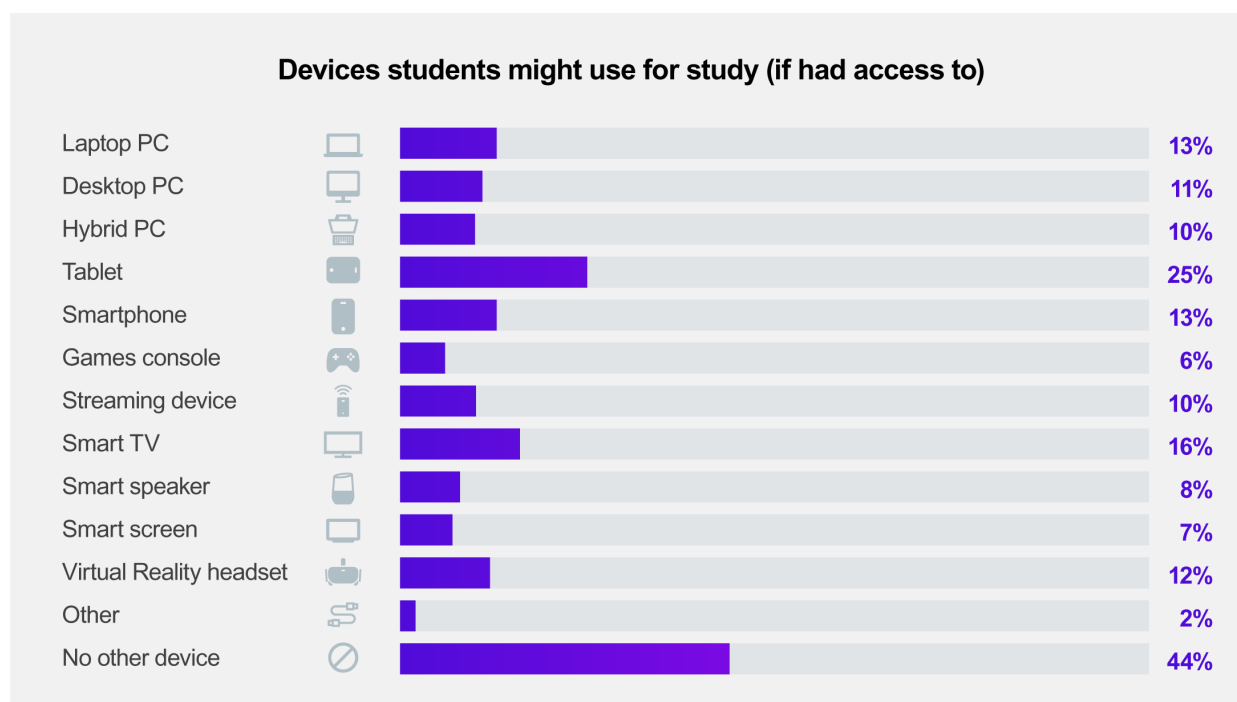


Figure 5 Devices students might use for study if they had access to them

This is supported somewhat by responses in Figure 5, where 44% of respondents said they would not use another device for study even if they had access to it and also in Figure 6, where 34% said they would not use a device they access even if the OU made study materials available via it.

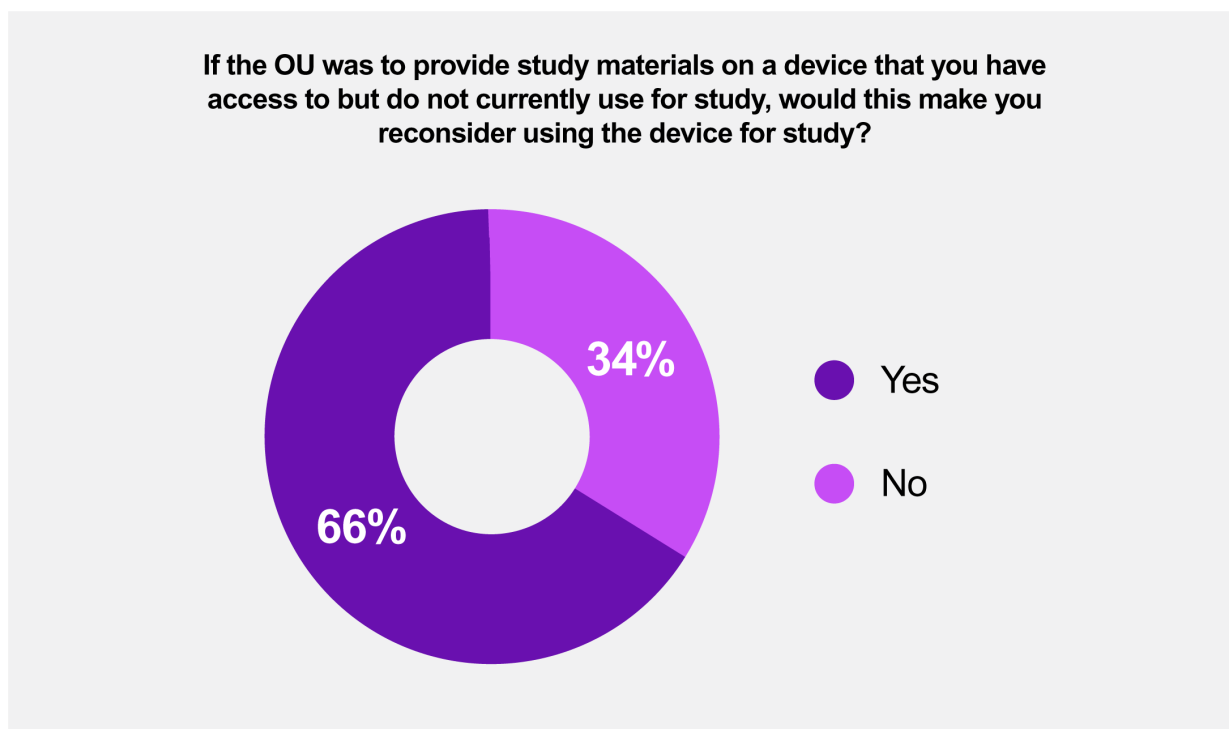


Figure 6 Students future device intentions

Correlation with sector evidence and other research

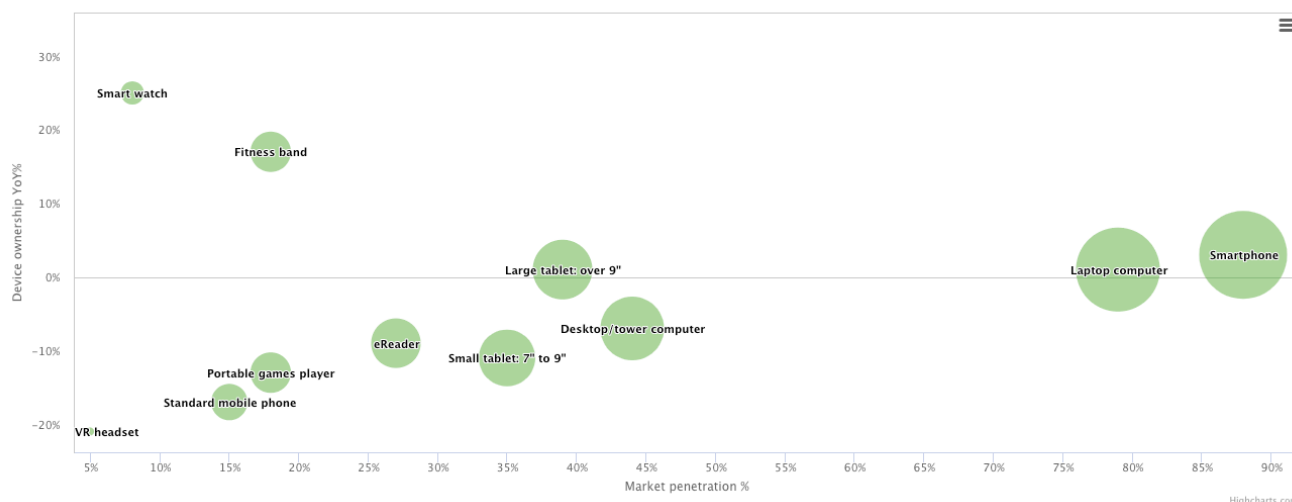
The survey findings demonstrate that device usage is more widespread than we may have previously thought, and that it is much wider than we currently accommodate for learning material delivery via our VLE and other digital channels.

It also supports research undertaken into mobile learning among Open University students by Cross et al. (2017). This work explored student mobile learning and the changing nature of how students are interfacing with their devices. The research found that the majority of students own handheld devices and that their use is increasing but pedagogic impact remains under-realised.

The data also appears to bear out industry data in recent years, which shows massive growth in device usage in the marketplace. For example, Deloitte's Global Mobile Consumer Survey has been carried out every year since 2012 and has found (Figure 7) that smartphone market penetration (i.e. the number of people who own a smartphone) has risen from around 50% in 2012 to almost 90% in 2018.

Similarly, tablet penetration rose from below 20% to over 60% during the same period, while laptop penetration has remained almost the same over this period (around 75% year-on-year.)

Learning Innovation – Student Device Usage Survey – findings summary



Weighted base (2017/2018): All respondents aged 18-75 years (4,002/4,000)
 Source: UK edition, Deloitte Global Mobile Consumer Survey, May-Jun 2017, Jun 2018
 Please note: VR data for 2017

Figure 7 Deloitte Global Mobile Consumer Survey, 2018 – Device ownership

When comparing this with data from surveys carried out by EDUCAUSE (Figure 8), there appears to be a strong correlation. Both sets of data are very similar to our own data (Figure 1), suggesting our student population is also comparable to both the wider student and consumer populations.

This correlation could potentially be useful for mapping future trends and informing policy and strategy, but also for supplementing any additional research we might undertake.

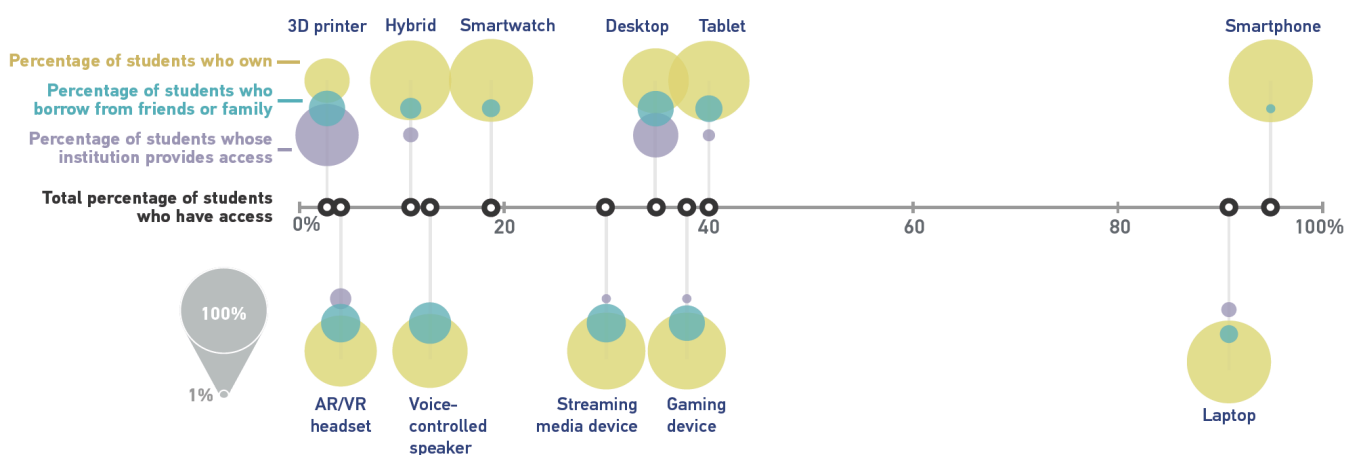


Figure 8 ECAR Study of Undergraduate Students and IT, 2018 – Student device access and ownership

If we look to the future, the projection of growth for Internet of Things (IoT) connected devices is huge and rapidly increasing. In 2018 the global installed base of such smart devices sat at around 23 billion devices (Figure 9), according to IHS research. However, this figure is expected to more than triple to around 75 billion devices by 2025.

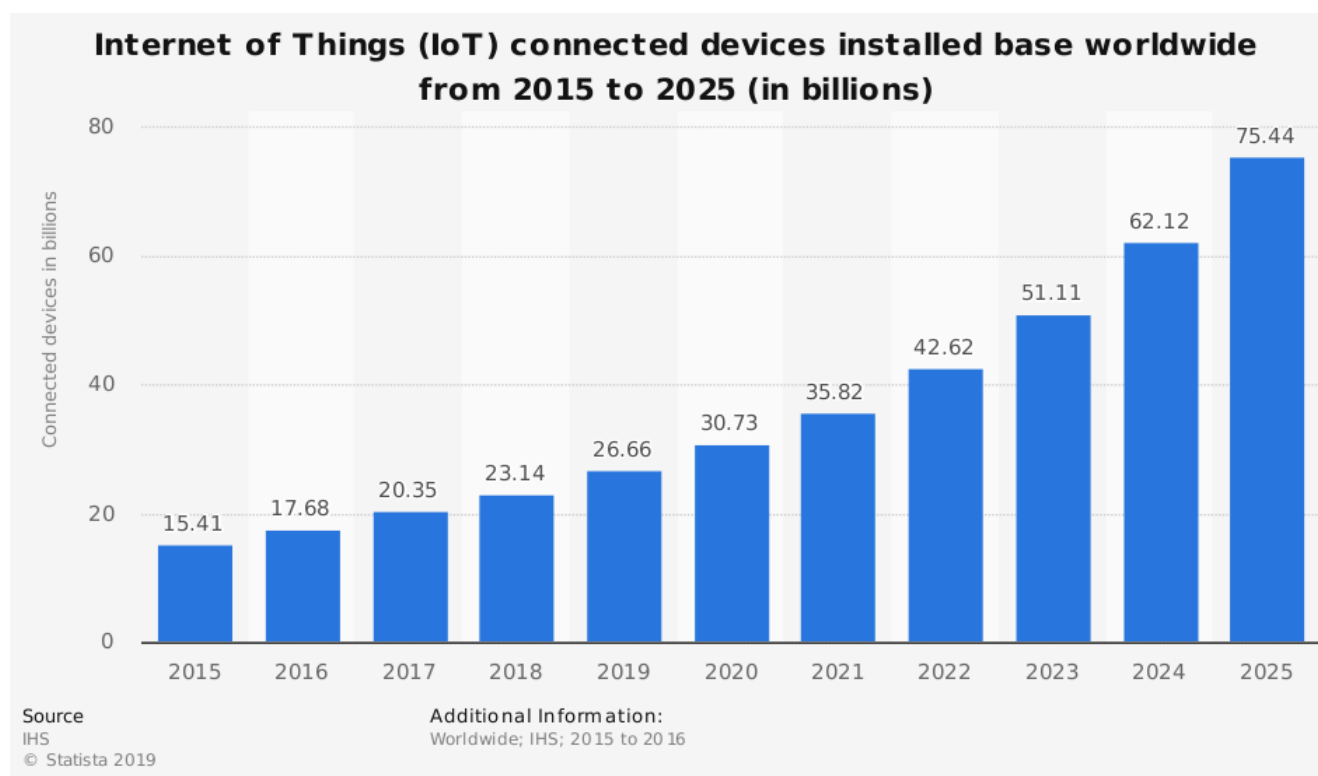


Figure 9 IoT connected devices (including predicted growth) 2015 to 2025

The relationship between our data and the wider industry data does indicate that our student population is representative of the wider consumer population. The suggestion is, therefore, that the type of growth that is forthcoming will only lead to increased usage of smart devices across our student population.

Conclusions

From the findings of the survey it is possible to draw a few simple conclusions:

- Students currently primarily use a laptop for study, but a significant percentage use a desktop PC, tablet and smartphone.
- While students own an increasing array of devices, the majority of these are not currently used for study, but rather personal usage.
- 89% of students now use a smartphone on a regular basis, but less than half this number (44%) use one while studying.
- More than a third of students have a streaming device that they use for personal use.
- Two-thirds of students would consider using a new device for study purposes, if the OU made study materials available via that device.
- Connectivity, availability of device, study location, time of study, and accessibility limitations were all rated at <15% when students were asked about reasons for not using a device for study, indicating that they are not hindering factors in device adoption.

Further research

When considering the above conclusions, there are a variety of themes that we can identify to help guide the areas for research, for example.

- Further research into student study habits – working with colleagues in IET and the Library.
- Understand student reluctance to use devices for study – is it a lack of digital skills that is putting students off using the devices, a simple lack of awareness, or something deeper? Working with Jo Parker (Senior Library Manager, Digital Capabilities) to relate this project to the DISC project, we can help to explore these issues.
- Identify what types of services and tools students are using on the devices for personal use that could be applied for future study/learning and teaching purposes – a number of students who took the survey have agreed to be involved in future trials and to help us test out hypothetical situations and this will help us build a more accurate picture of behaviours.

The initial purpose of the student device usage survey was to provide some current, relevant data to help guide the early phases of a smart technology project that we are setting up to further investigate the potential benefits and impact of smart devices for student success. This project is now in the early phases of setup and we will be researching in the following areas:

- **Student environment simulation:** One of the main aims of the project is to provide a space that we can outfit with the latest smart devices and a consumer level data connection to simulate a standard home-grade Wi-Fi and router setup and the types of environments students may find themselves in.
This space will be made available at specific times to colleagues to experiment with technology they may be unfamiliar with, but which students are already using. This will better equip them to make informed decisions when producing learning materials or providing support and assistance.
- **Casting/streaming:** of learning materials from a device-to-device or device-to-screen, including video, presentations, mirroring, etc. This is a common feature in homes now, with casting ability now built into the operating systems of most devices and TVs, as well as in the vast majority of internet browsers. The ability to use a second screen while studying could be appealing to students and not dissimilar to something we used to do in the past – sending out a VHS or DVD to watch while reading from a printed text.
- **Continuity:** generally described as the ability to utilise functions across devices in a manner that is seamless. For example, using one device and then picking up from the point you left the session on another device (e.g. reading module content on a tablet and then picking up from the same point on a smartphone via read-aloud audio).
The key here is that the devices all form part of a larger ecosystem and are not used as independent tools that the user needs to copy files or data between, rather everything is available and synced across the devices instantly, so that the user can access them on the go at any time they wish without having to perform any save or copy function.
For students that lead busy lives, the ability to use multiple devices in multiple locations during what can be described as a single study session could make a huge difference, reducing stress and the time it takes to study.
- **Smart speaker:** utilising smart speaker technology to control audio / video and other media playback across a range of devices for a variety of purposes, in addition to utilising the speakers to send queries to tutors and to get answers about OU content and admin quickly and easily. We also wish to test out smart assistant features (Alexa, Google Assistant) to

establish how they can support students access content and updates, as well as setting up and carrying out group / conference calls.

There are numerous possibilities for implementation, and these are also described in the other scenarios here, a lot of which will use the smart assistants in a typical setup via the smart speaker. A good number of our students (19%) said they use a smart speaker, yet we have no materials in our current offering that can be accessed via them. With some simple tweaks to how we group and host our e-texts and audio files, we could quickly and easily enable a lot of use.

- **Smart home:** testing the idea of setting up and actioning study sessions/routines that assist the student in their study. The idea here is that we can enable smart features with voice/digital commands to reduce time take to complete activities, including the automation of regular activities and the creation of automatic schedules according to student study behaviours.

For example, a student can simply say “OK Google/Alexa, start study” and the device turns on do not disturb mode on the phone, tablet, laptop, and other devices, dims the lights, puts some quiet background music on and automatically opens a browser and goes directly to the VLE page for the module the student is studying.

There are a variety of other similar things that can be automatically actioned, but the idea is that the student can set these up to assist their study and over time the smart assistant can learn and suggest other helpful routines, essentially becoming a smart study environment.

- **Xbox and Windows 10 app:** Xboxes are now essentially Windows 10 PCs and have native keyboard and mouse support. From Autumn 2019 the Edge browser will gain full Chromium support, meaning that it acts like Google Chrome and can use Chrome extensions. This big upgrade in functionality means that an Xbox will be able to run like a laptop/desktop running a Chrome browser and offers a massive functionality boost for users, who could use the Xbox as a replacement for a PC, while also using it’s other native benefits, such as the new accessible Xbox Adaptive Controller, voice control, and full Cortana and Alexa functionality.

Not a single student in our survey currently uses their console for study, possibly because they are unaware of these functions.

- **Accessibility:** almost every new smart device on the market has some kind of accessible control system built into it. Be it voice control, text-to-voice, or voice-to-text, the systems have been rapidly improved in order to keep up with market trends and to enable platforms to remain relevant and viable in the current competitive marketplace.

The major benefit of this is that these are essentially accessibility improvements and if they could be leveraged could outweigh any investments in recent years made into specific accessible systems. The investment made by big tech companies in producing natural sounding smart assistants that can believably hold conversations with users was intended to make them more viable for consumer adoption.

However, the unintended consequence is that each of these can now read text aloud to a far more accurate and believably human level than most specialist text to speech readers have been able to, as they simply didn’t have the same level of money to invest due to the lack of a financial return. With these assistants now in the pockets of most people, the ability to leverage the assistants to specifically support education and study purposes offers a great potential benefit to those who need support.

In addition, a device such as the Xbox Adaptive controller, which was specifically aimed at allowing users with motor and physical impairments to play games, means that any user

with standard accessible input devices (such as joysticks or accessible push buttons) can link into the Xbox Adaptive Controller and operate the non-gaming functions, such as browser, digital keyboards, search engines, Skype, etc. The cost is far reduced in comparison to other specialist equipment too, so in helping to bring these products to market, the retail companies have also helped in reducing barriers to entry for educational purposes.

- **Media consumption:** one of the areas we'd like to explore is how media is consumed upon the devices. The data from the student device survey suggests that students have access to a wider variety of device than we may have previously understood, and smartphones are being used for study more than any other device, yet we are still outputting media in modules which is designed primarily for laptop and desktop.

Across the wide variety of devices in use, there may be ways to subtly adapt our current output to accommodate these devices and offer students a better experience with relatively little change at our end. There are also new device types (VR, console, smart TV and smart screens) of which we have relatively little experience and information about and yet they are becoming common in our students' homes (half of students told us they have a smart TV). How can we adapt our offering to cater for these new systems and is that something we should do?

- **Environmental:** does the environment that a student studies in affect their study habits and do we need to consider changes to our offering (and therefore our production processes) to accommodate/lessen the effect of these? Utilising smart technology, can we offer advice and guidance and also systems that adapt to the student's environment, especially when they have left the home or office to study.

For example, could we use beaconing and location data to understand where a student is studying and make some changes to the device or media output on the device that improve the study session. This could be relatively simple, such as an automatic change in screen brightness or triggering a blue light filter on the device to reduce eye fatigue when reading a lot of on-screen text.

- **Connectivity:** we will also be able to test the variety of features that the devices offer that we currently cannot via our networks, such as continuity and streaming, as well as how easy it is to get a device set up on a home network. All of this can then be used when suggesting a change to our computing guide or when considering how best to deliver specific types of media content and providing the information in the module guide.
- **Smart watches:** there is currently a question as to how these watches could affect study behaviour. Can you use them on the move to keep in contact more easily or liaise with fellow students and tutors? Can you use them to programme your study sessions? What about their usage in providing prompts and suggestions when studying at home? How do they link up with the other smart home devices? Is quantified data a useful student tool?

Alignment

There are multiple implications for this work, not least that its findings and data could be useful for a variety of teams and projects currently being undertaken within the university. These include:

- **D&P and Commissioning:** the findings from the research will help to advise media production and potentially have an impact on timelines and media production schedules.
- **IET:** working with Simon Cross, we will be looking to combine the data from the E-pedagogy of Handheld Devices Surveys with our own data and findings to improve the research outcomes and to help inform our recommendations. I will also be sharing our findings with

Simon and there is potential for alignment of this project with their work, including helping to shape their upcoming survey.

- **LXT:** both the Student Experience and Learning Systems teams are undertaking work with students around the digital experience and the findings from our research could be valuable.
- **Library:** working with various colleagues across the Library, including Jo Parker (DISC) and Keren Mills, in order to share our findings so that they can be used to help shape their work on digital capabilities and information literacy. They will also have useful insight into student practices and device usage that we can incorporate into our work.
- **SeGa/accessibility:** The testing of the accessibility features of the various devices will also help to shape possible future investment in or choices around accessible tools and services.
- **SiSE:** the work we are carrying out might be useful for the SiSE team and we will be sharing the findings with Ruth McFarlane to see if it can help shape any of the decisions being made there to inform possible device usage in new schemes they are setting up.
- **Helpdesk:** our research could also have a positive impact on the Helpdesk's ability to answer student enquiries across a range of new device types and services, even if it is only that the advisors become more familiar with the variety of devices being used by students.
- **OUSA:** there is a potential for this work to help inform OUSA about current student trends in device usage, especially if linking this work with IET and LXT, and therefore the outcome of the various strands of work could be used to better support students and enable OUSA to make more informed decisions about where additional work or investment is required.

References

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Further information

Further additional information regarding this research will be disseminated via the Learning Innovation website at learninginnovation.info and via the Scholarship Exchange.

Should you have any questions or need additional information, please contact Andrew McDermott at Andrew.McDermott@open.ac.uk or drop us a line at lds-learninginnovation@open.ac.uk.