UDE Umfrage

mitMeinungwirken

Still online?

Student survey regarding their media technology equipment - overall report

Results of the university-wide survey conducted at UDE in the summer semester 2020

BY KARL-HEINZ STAMMEN AND ANNA EBERT

Zentrum für Hochschulqualitäts-entwicklung

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Open-Minded

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Student survey regarding their media technology equipment in the summer semester 2020

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As a result of the COVID-19 pandemic, teaching at the University of Duisburg-Essen (UDE) had to be converted to online formats at very short notice. But to what extent were students prepared to participate in classes held exclusively online and to organise their learning remotely? At the beginning of the lecture period, the Centre for Quality Enhancement and Teaching Development (ZHQE) surveyed UDE students on their media technology equipment, the altered teaching and learning formats, and their needs for support.

Summary

More than 7,000 students took part in UDE's survey, which aimed to find out about their media technology equipment, specific needs, knowledge and attitudes towards working with digital teaching and learning formats during the online semester. The survey was designed as a full population survey, achieving a response rate of 19.7% and providing a lot of important information about the students' current situations.
The majority of UDE students have sufficient media technology equipment in order to also carry out study-related activities remotely. The majority also have access to a stable Internet connection, enabling them to learn and participate in classes independent of their location. However, the number of students facing challenges in this regard is not insignificant. For example, one in five students lacks at least one device needed to be able to carry out the required study-related activities.
In some cases, students are also unable to work online for a longer period of time without disturbances due to capacity issues in their Internet access or due to caregiving duties.
Most digital learning and teaching tools offered by UDE are already known to the students and have already been used in classes. Particular reference can be made here to the learning platform Moodle and tools for conducting audio and video conferences. Of the digital applications offered externally, it is mainly teaching videos and messaging services that are used as part of their studies. Whilst the majority of students can log on to the virtual campus via VPN, most of the students surveyed are not yet aware of the option to access UDE's virtual desktops (VDI).
For the most part, UDE students are willing to adapt to the new study situation and to engage with digital learning and teaching formats more extensively. However, they also emphasise that individual consultation with teaching staff is important to them even in remote teaching circumstances. Well over half of the respondents expect a decline in their motivation to study if teaching is only offered in digital form. This is also associated with the concern that digital teaching and assessment formats could have a detrimental effect.
The majority of students rate their ability to deal with common software, such as word processing or presentation programs, and smartphone applications, as well as their ability to use the Internet, as good. In contrast, skills for using PCs or notebooks are given a comparatively low rating.
Overall, half of the students believe that teaching held exclusively online presents opportunities; at the same time, almost half also see risks in this.
The results of the survey have contributed in many ways to making substantiated decisions on the further development of offers and services in the online semester. This particularly concerned promoting asynchronous teaching and learning formats, designing (digital) examinations and supporting students with caregiving duties. The results also highlight how important it is to plan digital teaching and learning formats with careful thought given to the students' equipment, knowledge and requirements. As large parts of the winter semester will also have to be dealt with digitally, higher education institutions will also be required to take this into consideration and accompany developments with surveys of this kind in future.

Aim of the study

By mid-March it was becoming apparent that, due to the SARS-CoV-2 pandemic, the UDE summer semester 2020 would not be able to be offered in the usual formats, based predominantly on face-to-face teaching. Teaching staff began to reconfigure or completely redesign their courses accordingly. This took place in difficult circumstances: on the one hand, teaching staff were first of all faced with the challenge of organising their own (research) work remotely due to strict restrictions and sometimes rapidly changing or unclear conditions. On the other hand, they were required to contribute towards preparing a semester that would be ready to start on 20 April 2020, including suitable teaching and examination formats, allowing students to earn credit. In concrete terms, this meant arranging courses in such a way that both teaching and learning processes and assessments could be provided remotely. At this time, important frameworks, for example for carrying out assessments remotely, still had to be developed, approved and regulated by a corresponding set of regulations – at UDE, the corresponding regulations came into effect on 14 May 2020.

As spatial separation due to guidelines and regulations continued to progress and it became evident that this situation would continue for an unforeseeable amount of time, stakeholders who were involved in organising and implementing remote teaching started to work together very closely in virtual environments. A lively and highly constructive discussion on digital teaching emerged. In a very short time, digital services were expanded to help teaching staff reconfigure or redesign their courses. It should be borne in mind that entirely digital teaching formats, as were needed in the summer semester 2020, had not previously been widely available at UDE before the crisis. Instead, the focus was on blended learning approaches that combined the advantages of face-to-face teaching with the opportunities of digital environments and tools.

Joint action to support the switch from face-to-face to online teaching

To assist teaching staff in reconfiguring or redesigning their courses, great efforts were made to ensure that digital and e-learning formats could be offered within a very short time. UDE's Centre for Information and Media Services (ZIM) massively expanded the technical infrastructure, as well as the range of information and training offered to support digital teaching formats. The task force for teaching and learning, composed of members of the university management, faculties, student representatives, e-learning experts, central services and facilities, university administration and UDE's staff councils, amongst others, has played an important role. This task force examines how teaching, learning and examinations can be organised and held in times when social distancing is a priority and discusses pragmatic approaches and solutions that can be implemented in the current situation.

Information on media technology equipment was missing

At the same time, it was clear to those involved that remote teaching can only succeed when students are also able to make use of the (newly conceived) courses from a technological and organisational perspective. This included, for example, the necessary media technology equipment (hardware) required for each course offered, as well as the ability to access the Internet for enough time and with sufficient data allowance in order to complete study-related activities and learn remotely. Additionally, it was also known from, for instance, student counselling services or mentoring within faculties that a significant number of students depend on workstations in the library or the computer rooms provided by the ZIM to complete study-related activities. Teaching staff in particular were wondering to what extent students would be able to make use of the planned virtual courses from a structural and organisational perspective. However, UDE had no systematic information available on its students' media technology equipment (hardware) or Internet access. As it was to be assumed that remote teaching posed a particular challenge for students, the relevant information was to be gathered by means of a student survey.

UDE asks its students: how well does online teaching work?

The idea to conduct a student survey, as put forward by teaching staff, was implemented within a very short time. The ZHQE was assigned the task of designing and carrying out the corresponding survey by the Vice-Rector for Teaching and Learning. To implement this process as quickly as possible and to take into account the diverse needs of the stakeholder groups in a suitable way, the ZHQE created a working group (WG) composed of representatives from the student body, teaching staff, UDE mentoring system, ZIM and the Commission for Teaching, Learning and Further Education (KLSW). Building on drafts from the ZHQE, the WG designed a questionnaire that both captured the necessary information and simultaneously allowed students to reflect on their first weeks of experience with remote teaching. An important aim of the survey was to have results available within a short time so that measures to support students could be implemented within the current semester. In addition, the results could be used in the organisation of future semesters.

The target group of the student survey consisted of all students who were enrolled for the 2020 summer semester at UDE, with the exception of doctoral candidates. As all students who belonged to the target group were invited to take the survey, a full population survey was therefore undertaken. Although a sample survey may have been possible and plausible and the target group was extremely large, those involved considered it important to give all students the possibility to provide UDE with feedback on remote learning.

The student survey could be launched on 29 April thanks to the work within the WG and the prompt support of many UDE units and colleagues who played a part in the implementation of the survey. The first results were presented as part of the Diversity Day on 26 May.

Survey design and sample

The survey was launched as an online questionnaire, which was also optimised for use on mobile devices. All texts (invitation and reminder to complete the survey, the survey itself) were translated into English by UDE's Translation Service, part of the International Office, allowing the survey to be completed in two languages. 5.5% of respondents chose to complete the survey in English.

Nearly one in five students participated

For data protection reasons, the invitation to complete the survey was sent out via email addresses pseudonymised by the Registrar's Office. The emails sent to these email pseudonyms are redirected to the respective email addresses that display the students' real names in the form of firstname.surname@stud.uni-due.de, without the ZHQE being able to establish a connection between the pseudonym and the real name. A total of 37,818 student pseudonyms were made available, therefore forming the population of the survey. 1,898 students had to be excluded due to their objection to the use of address data for student surveys, and a further 358 students could not be reached since their invitations could not be delivered. The gross sample was therefore formed of 35,920 students. The survey was launched with the invitation sent out by email on 29 April and was available to complete until 17 May 2020. Two reminders were also sent out. At the end of the field period, following the exclusion of questionnaires that were clearly invalid, there were 7,012 evaluable responses, corresponding to a response rate of 19.7 percent. The survey was designed to have an average completion time of 10 to 12 minutes and was filled in by students with a median time of 15 minutes and 49 seconds. The longer average completion time could be explained by a large number of free-text responses, some of which were written in great detail.

Survey provides deep insight into the study situation

As is the case for surveys in general, it cannot be entirely clear whether the data gathered is representative. It would be representative if the results from the sample could be applied to the population with no deviation or bias. However, it cannot be determined entirely in which respects the population is heterogeneous because the corresponding information on the population is not available for all relevant structural variables (e.g. educational background). Whether a sample is free of bias or not can therefore normally only be tested in relation to known structural variables, but uncertainties remain. If relevant and known structural variables from the University's student statistics and the survey are compared, it is apparent that the proportion of women in the survey is higher and the proportion of men lower than the University's statistics would suggest. This echoes experiences with other student surveys at UDE. Equally, more students in their early semesters and fewer students in higher semesters took part than expected. Overall, the sample did not constitute an ideal representation of the

Table 1: Population and sample: gender, degree pursued, semester [1]

		Population+	Sample
Gender	Male	51.2%	36.8%
	Female	48.8%	61.1%
	Diverse/ I do not wish to be categorized*	not specified	2.1%
Qualification pursued	Bachelor (excl. teaching qualification)	54.4%	48.1%
	Bachelor with teaching qualification	15.7%	19.6%
	Master (excl. teaching qualification)	20.1%	20.2%
	Master with teaching qualification	4.1%	8.3%
	State examination in medicine	5.2%	3.3%
	Other	0.5%	0.5%
Semester	1 to 2	26.2%	29.7%
	3 to 4	22.6%	27.1%
	5 to 6	17.1%	18.3%
	7 or higher	34.1%	24.9%

* Due to the small number of cases, this category could not be considered in gender-specific analyses for this evaluation.

\+ Source: UDE student statistics.

1 In German, a distinction is made between the total number of semesters enrolled (*Hochschulsemester*) and subject-related semesters for credit (*Fachsemester*). Here only subject-related semesters are taken into consideration.

population based on the characteristics outlined here. However, the results of the sample are relevant due to its size alone and allow highly informative statements on trends to be made. This seems particularly appropriate in places where even small percentage values correspond to rather large groups of students whose needs UDE must currently provide for (e.g. 5% corresponds to around 350 students) (Table 1).

Results

1 Well equipped for remote teaching and learning?

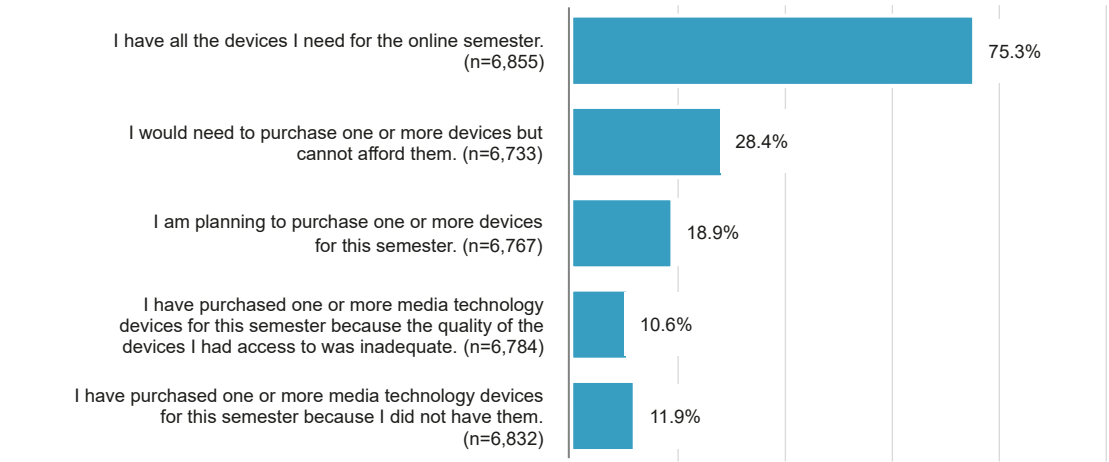
Without access to media technology equipment (hardware), participation in an online semester is hardly conceivable. In this situation, it is less important whether the hardware is the student's own, as work can also be done on borrowed devices. Significantly more important is that the hardware is adequate, i.e. that it is suitable for performing the required study-related tasks. Whilst a smartphone, for instance, can be used to a limited extent to view recordings of classes, it is not suitable for writing coursework on. The survey shows that the majority of students had sufficient media technology equipment at the time of questioning: overall, 79.0 percent of the students assume that they can complete the required study-related activities in the summer semester 2020 with the media technology equipment currently available to them, 6.1 percent see (major) problems in this regard, and 14.9 percent of the students are undecided [see Table A1.1]. The result, or intermediate result, of the students' assessment of their individual preparation for the online semester is the same: three quarters of respondents (75.3%) state that they have all the media technology devices needed for the online semester. At the same time, 11.9 percent of the students have already purchased at least one media technology device that was lacking to prepare for the 2020 summer semester. 10.6 percent have improved the quality of previously available devices through new purchases and 18.9 percent of the students have planned to purchase one or more media technology devices. However, it is also notable that around one in four students (28.4%) state that purchasing one or more media technology devices is necessary but that they cannot currently afford to do so [see Fig. 1/Table A1.2]. This would indicate that some students who see themselves as fundamentally well positioned with regard to existing hardware are nevertheless partly making do with inadequate hardware in some areas.

> *"My laptop is ancient and takes ages to do anything." (5517)*

When assessing the current need to purchase devices to participate in the online semester, it becomes apparent that for two thirds of the students (66.4%) there is no need for new purchases. 14.2 percent expressed a basic

Figure 1: Purchasing devices for the online semester

How did you prepare for the start of the online semester? „Yes" answered to following statements



need for new purchases, whilst 19.4 percent of the students reported an urgent need [see Fig. 2/Table A1.3].

> *"Unfortunately, I have to share my laptop with my siblings, so I can't always use it. My siblings also have online seminars." (7979)*

To summarise, it can be noted that though a majority of the students have few or no problems with media technology equipment, around one third of respondents nevertheless express a more or less urgent need for new purchases. It is to be borne in mind that this need could potentially also arise regardless of the online semester, but may have been heightened by the rapidly changing situation.

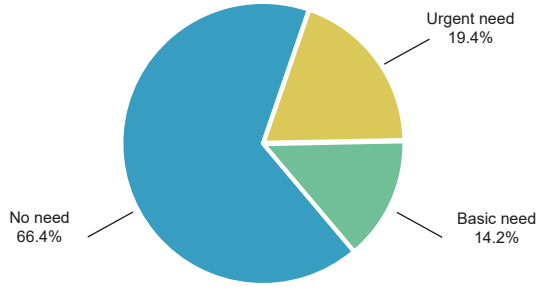
The information regarding which media technology devices students can predominantly use in the 2020 summer semester for study-related tasks and learning can also be important for teaching staff when planning future digital courses. Personal computers (PCs, including desktop computers, notebooks/laptops, and convertible laptops that are a combination of PC and tablet) are more suitable than other (mobile) devices such as tablets or smartphones, particularly when producing written work. 91.8 percent of the students have exclusive access to at least one device in the PC group and a further 6.7 percent can at least borrow devices of this kind. 1.5 percent of the respondents do not have the possibility to use at least one of these devices – these students have used only smartphones, tablets and/or e-book readers until this point [see Table A1.8].

A differentiated consideration of the devices available shows that 92.3 percent of the students have access to a notebook/laptop and/or convertible laptop (desktop computer 49.5%, tablet 54.8%), 64.8 percent of respondents state that they have access to a corresponding device with a sufficient level of performance (desktop computer 23.4%, tablet 20.7%), a further 16.5 percent of the students have a notebook/laptop/convertible laptop whose performance level cannot be assessed (desktop computer 3.5%, tablet 6.0%), and 11.0 percent have such a device available to them in principle but do not use it (desktop computer 22.6%, tablet 28.0%) [see Fig. 3-4/Table A1.7].

88.1 percent of the students who have access to a notebook/laptop or convertible laptop will mainly use this device for study-related tasks and learning. This figure stands at 54.5 percent among the respondents who have access to a desktop computer, and 52.7% among students with tablets [see Table A1.5].

In purely online classes, but also in blended learning formats, synchronous teaching and learning periods using picture and audio transmission play an important role within video conferences, for example in the form of live-streamed or recorded classes, consultation scenarios, etc. In order to participate in video conferences, speakers and/or headphones are needed as an output device, as well as a webcam and/or camera and a microphone as input devices. If an output and/or input device is lacking, participating in synchronous teaching and learning periods in online classes is not possible, or only to a very limited extent. Overall, 84.2 percent of the students state that they have access to all necessary input

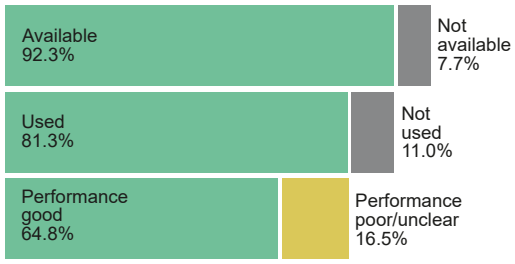
Figure 2: Need to purchase devices



n=6,672

Analysis based on own calculations, see comments under Table A1.3

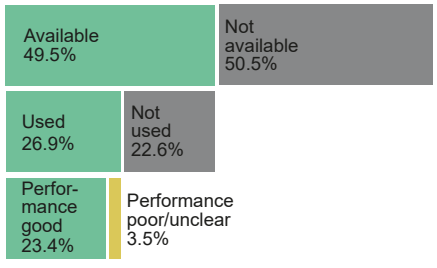
Figure 3: Availability, use and performance of notebooks/laptops/convertible laptops



n=6,825

Analysis based on own calculations, see comments under Table . A1.7

Figure 4: Availability, use and performance of desktop computers

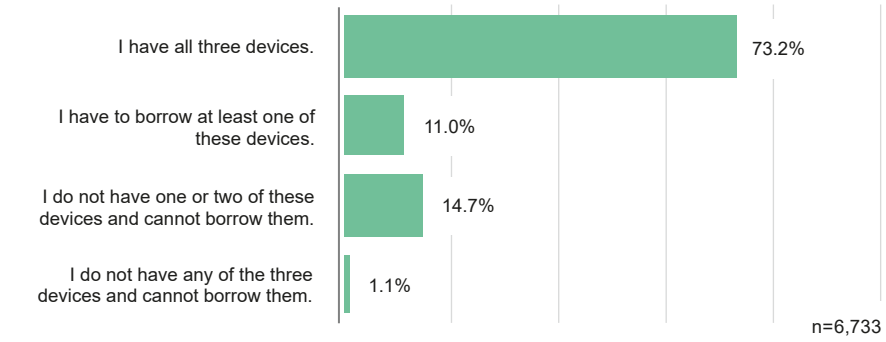


n=6,595

Analysis based on own calculations, see comments under Table . A1.7

and output devices, with 11.0 percent relying on borrowed devices. 14.7 percent lack at least one of these devices and 1.1 percent have no access at all to the necessary input and output devices. One percent of the students face the challenge of only being able to study with the use of a smartphone.

Figure 5: Access to webcam, microphone and earphones



Based on their experiences in the first weeks of the lecture period, some students will have equipped themselves with headsets by now, generally making it easier to participate in video conferences. It is equally clear that, at the time of the survey, the number of students who had to make do in order to participate in video conferences from a technical point of view is not insignificant. With particular regard to online assessment formats, it should be ensured that students have sufficient technical equipment so that any potential equipment that is lacking does not have a negative effect on the assessment [see Fig. 5/Table A1.10].

2 Stable connection? Connection, data allowance and Internet access

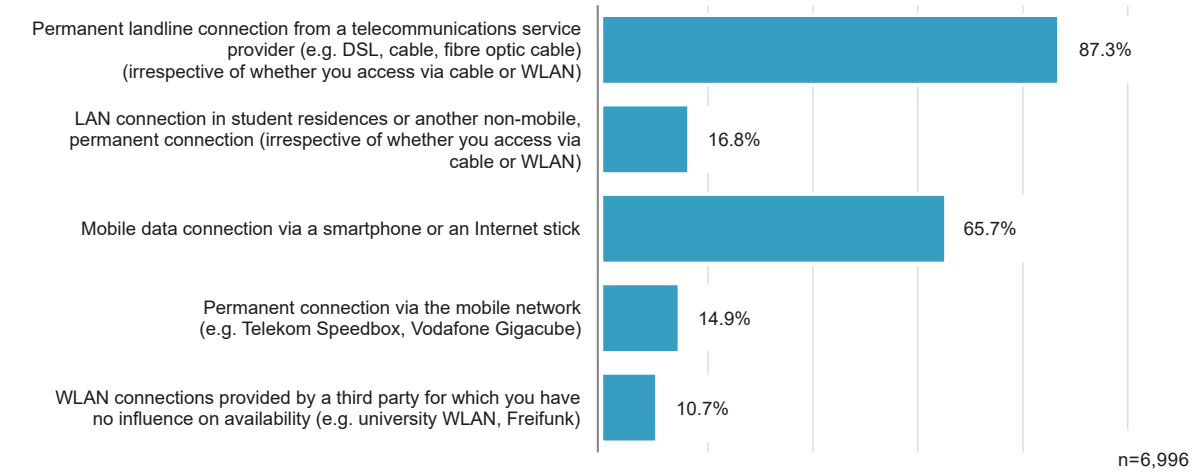
It is not conceivable that students can participate in an online semester without Internet access. Whether this Internet access is sufficient in order to perform study-related tasks depends on, on the one hand, the type and quality (in terms of the available data allowance, speed and reliability) of the Internet connection. However, organisational and social aspects must also be considered alongside these technical and structural requirements.

Most Internet connections are via fixed networks

The majority of the students (87.3%) can get access to the Internet to perform study-related tasks via a permanent fixed network connection or LAN connection (16.8%). 65.7 percent also use mobile data connections via the mobile network by means of a smartphone or Internet stick for this purpose, 14.9 percent rely on permanent connections via the mobile network, 10.7 percent of respondents access the Internet via third-party WLAN connections for which they have no influence

Figure 6: Internet access

Which options to access the Internet are available to you for completing study-related tasks and learning? Multiple selections are allowed.



on availability [see Fig. 6/Table A2.1]. In order to assess which form of access is most relevant for students, they were asked to evaluate which option they would probably use most frequently for study-related activities and learning in the summer semester 2020. Overall, 91.6 percent expect this to be either a permanent fixed network connection (81.6%) or LAN connection (10.0%). 3.4 percent assume that they will access the Internet via the mobile network with a smartphone or Internet stick and 2.8 percent will use a permanent connection via the mobile network. 2.1 percent of respondents assume that they will need to make use of third-party WLAN connections [see Fig. 7/Table A2.2].

Data allowance can cause bottlenecks

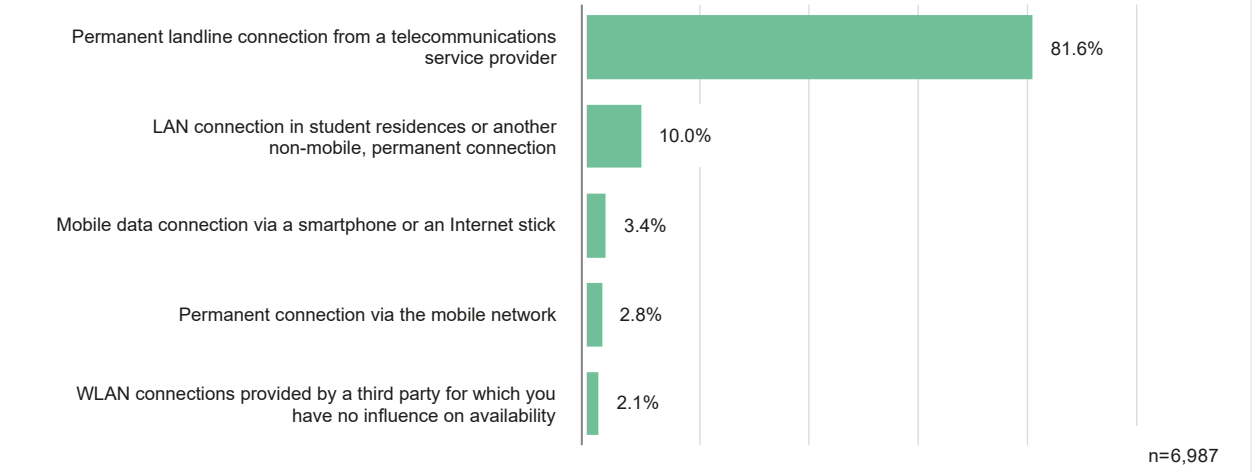
Depending on the way students are able to access the Internet, challenges can arise. Whilst permanent fixed network connections via telecommunications providers can be problematic, the options currently available on the market seem to be generally well suited for performing study-related tasks online in terms of data allowance, as well as speed and reliability. This also applies to LAN connections in student residences; however, here bottlenecks may well occur due to data allowance caps or speed restrictions. A similar situation occurs with regard to permanent connections via the mobile network; in this case, data allowance caps and the available speed are usually larger than for simple mobile data connections via the mobile network by means of a smartphone or Internet stick. As a rule, network coverage can lead to Internet access problems for both forms of Internet connection via the mobile network. Students who use mobile data connections via the mobile network by means of a smartphone or Internet stick as their main way of accessing the Internet run the risk of having their Internet access disrupted due to low data allowance or pre-emptive connection speed throttling. For this group of students, it is just as difficult to have a reliable Internet connection over the full semester as it is for those who predominantly use WLAN connections for which they have no influence on availability. These two groups of students constitute 5.5 percent of the respondents [see Fig. 7/Table A2.2].

One aspect of the reliability of Internet access is with which frequency the connection experiences capacity issues. Just under a quarter of the students (23.0%) state that they never experience capacity issues and 39.7 percent of respondents report capacity issues that occur once a week at most. Whilst 4.3 percent observe capacity issues once a day, 8.1 percent even experience this multiple times per day. Participating in online classes can therefore also be complicated by reasons that lie beyond the students' responsibilities [see Table A2.3]. It is to be expected that students who access the Internet via mobile connections are particularly affected by this: 24.7 percent disagreed or rather disagreed with the statement 'I believe that the quality of my mobile phone plan (network coverage and/or speed of data connection) is sufficient for completing study-related activities online'. 22.5 percent have the impression that the quality of their mobile phone plan is at least partly insufficient [see Table A2.4].

Internet access requires more than just technology

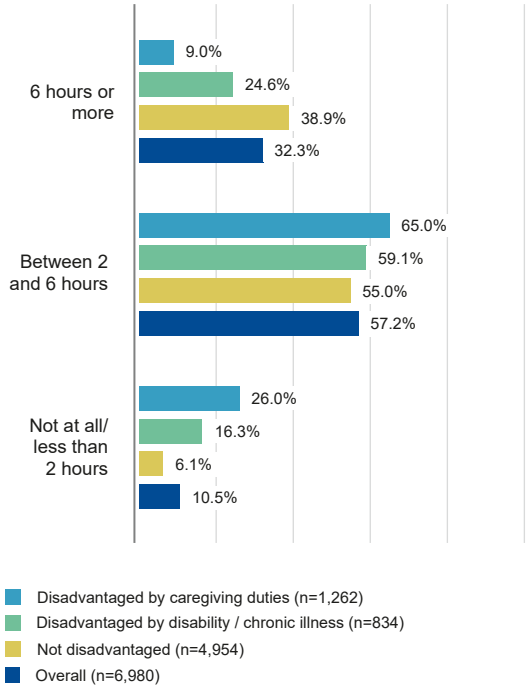
Alongside the essential technical items, students also have to create an environment for themselves in which they can go online to perform study-related tasks with minimal disturbance. Particularly at a time when contact with people outside of your own household has to be avoided, parents may be working from home and

Figure 7: Most frequently used Internet access option



siblings may also not be going to school, this can be especially challenging. The results of the student survey also confirm this: although it is no problem for just under a fifth of the students (17.9%) to go online for eight hours or more to do study-related tasks with no disturbances, 9.3 percent of respondents can only do this for less than two hours on average, and 1.2 percent not at all [see Table A2.6]. Particular challenges arise for students who are already disadvantaged in their studies by disabilities/chronic illness or caregiving duties. In these groups, the proportion of those who cannot go online at all or who can go online for less than an average of two hours a day for study-related tasks is 16.3 percent (disability/chronic illness) or 26.0 percent (caregiving duties) [see Fig. 8/Table A2.7].

Figure 8: Average time per day where it is possible to go online for study-related activities without being disturbed, e.g. to participate in a webinar or video conference differentiated by type of disadvantage



3 How does the media and information technology infrastructure contribute to supporting the online semester?

The construction, operation and development of the media and information technology infrastructure at UDE is carried out by the ZIM. The ZIM offers students services in fields including the digitalisation of teaching and e-learning (e.g. operating Moodle or study tools), workstation support (e.g. campus software, public workstations) and training (e.g. office applications). Many services were already designed to support students working remotely before the SARS-CoV-2 pandemic, making their studies more flexible. These include encrypted access to the University network via a Virtual Private Network connection (VPN), which for example is necessary for using network-licensed software or receiving access to licensed services from the University Library; virtual desktops (VDI) that can be used to access UDE PC pools regardless of time, location and space in order to use a large amount of the software offered and licensed by UDE and get a working environment that is independent from the students' own devices; and campus and state licence agreements for software that can be used for free by students in many cases.

Moodle use already widespread before Covid-19

Additionally, UDE has already been offering its teaching staff a wide range of opportunities to use digital formats and media in their teaching for a long time. Students have the opportunity to communicate with their peers and teaching staff digitally, both synchronously and asynchronously. It is to be expected that previous experience with digital teaching, learning and communication tools varies among students. 87.9 percent of respondents state that they have already used the learning platform Moodle. The majority of the students (63.5%) were also already familiar with audio and video conferences using applications offered by UDE. In each case, more than half of the students have watched teaching videos on Moodle, via Opencast or in DuEPublico (54.7%) or used online reserve collections (53.3%) [see Fig. 9/Table A3.1].

"It's a huge advantage to have the possibility to watch videos, for example of lectures or tutorials, at my own speed and as often as I want, therefore managing my own time. I expect to get a deeper understanding of the material that way." (2094)

However, other applications are currently only known to a few students. Despite that, almost all of the students (98.0%) have already used at least one of the applications or services offered by UDE that were listed in the question. On average, three of the twelve tools listed and offered by UDE were used in classes (M=3.3; SD=1.56; Mdn=3.0; n=7,002). Teaching and learning tools offered by third parties were, however, somewhat less common.

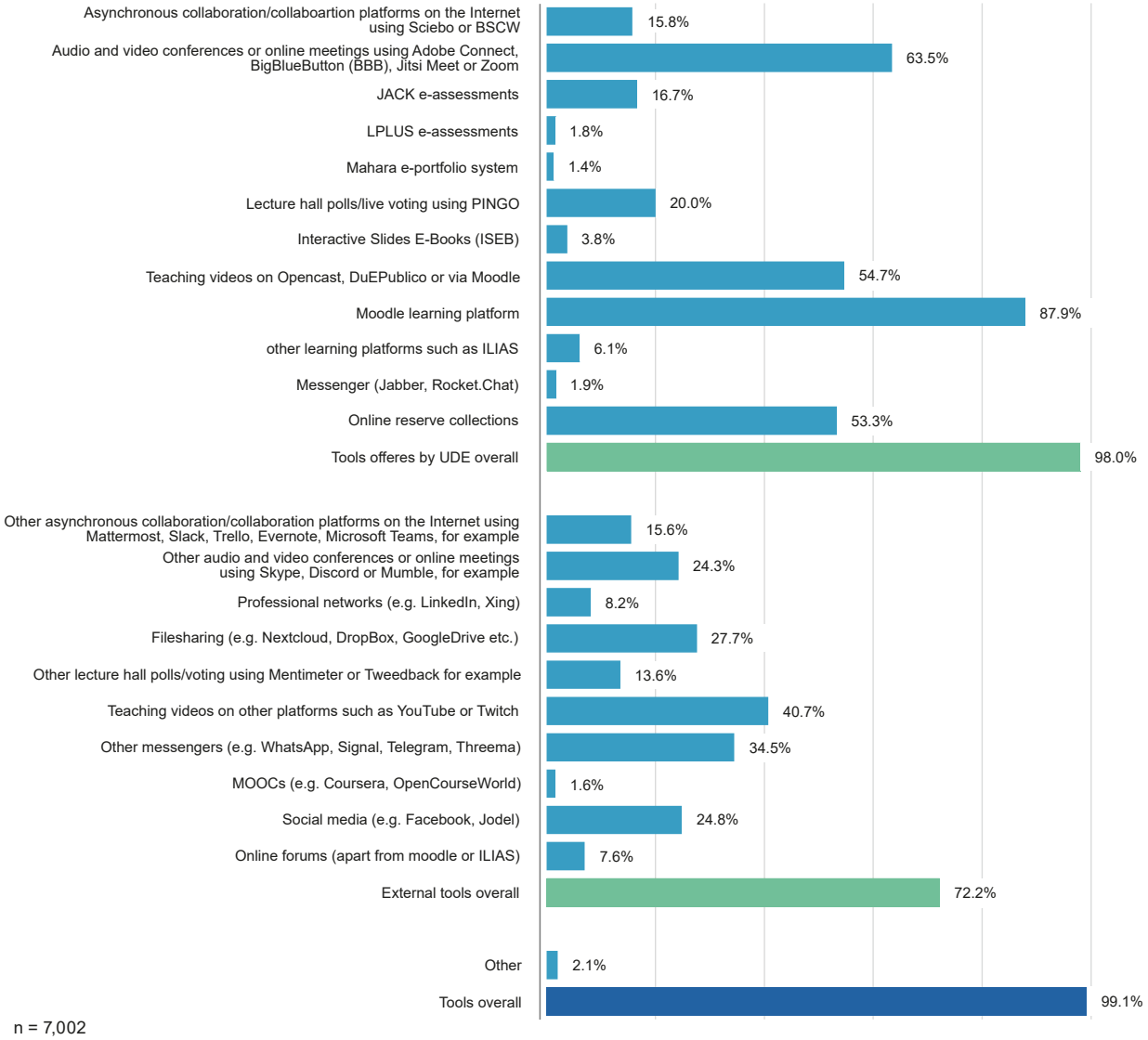
72.2 percent of the students state that they have already used at least one of the ten listed applications (M=2.0; SD=1.99; Mdn=1.0; n=7,009). Teaching videos on external platforms (such as YouTube) were used most frequently (40.7%). One third of the students (34.5%) also used messaging services (e.g. WhatsApp) in the context of classes, whilst in each case around a quarter of the students used filesharing services (e.g. Nextcloud) (27.7%) or held audio and video conferences via external programs (e.g. Skype) (24.3%). Other applications were utilised in classes to a much lower extent [see Fig. 9/ Tables A3.1 and A3.2].

VPN connection very well known, virtual desktops hardly at all

At the time of the survey, four out of five students (80.9%) knew about UDE's VPN service and 63.8 percent had already used it. Close to two thirds (64.6%) of the students are aware of the campus and state licence agreements on offer, with around half (53.3%) of the respondents having already used them. The possibility to access virtual desktops is less well known: 9.2 percent of respondents state that they have already used virtual desktops, whilst a further 17.6 percent are aware of the service but have not yet used it [see Fig. 10/Table A3.3].

Figure 9: Use of digital teaching and learning tools

Which of the applications and/or teaching and learning tools listed below have you used in the context of classes before or which have been used in classes you attended – irrespective of the semester? Multiple selections are allowed.

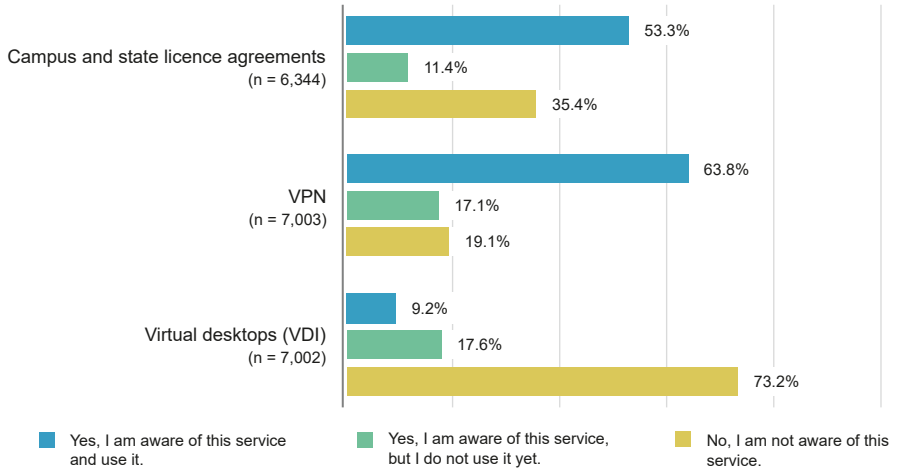


n = 7,002

Due to them being at university for a longer time, it is not surprising that Master's students are more aware of the services offered and use them more than Bachelor's students [see Table A3.4]. As study-related tasks such as literature research and/or borrowing e-books are only possible or are facilitated by the use of a VPN, it can be very helpful for students to be aware of (and then to use) this service. It therefore seems to be sensible to inform all students, and particularly Bachelor's students, about the ZIM's product portfolio. As a result, information on VPN connection, VDIs, and campus and state licence agreements was made available at the end of the student-survey.

Figure 10: Knowledge and use of UDE services

Are you aware that UDE provides [service type] and do you use it?

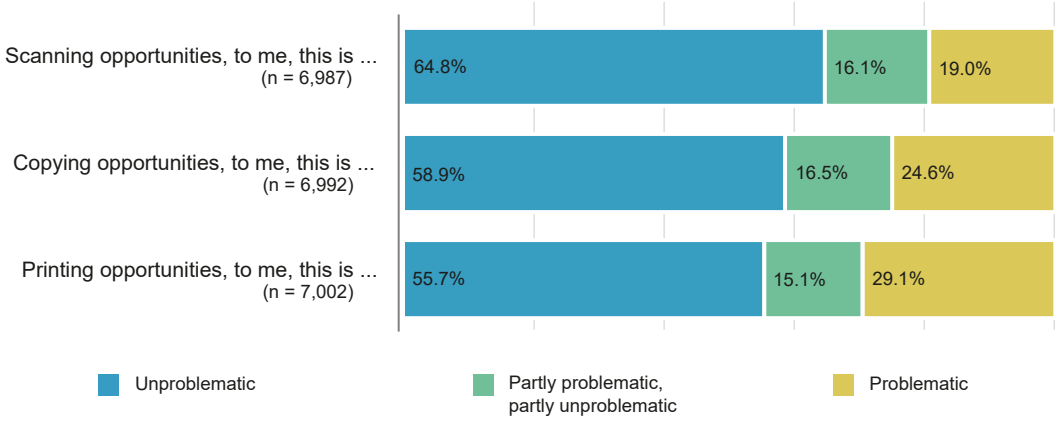


Paper is still needed for remote learning

Due to the strict general lockdown and the closure of UDE buildings, services, and facilities at the beginning of the SARS-CoV-2 pandemic, it was not possible to make use of UDE scanning, copying and printing services. Although the majority of the students had access to a scanner and/or printer at the time of the survey, still just under a fifth (17.6%) of respondents state that they could not use a printer [see Table A1.4]. If the media technology devices available have no features allowing electronic documents to be edited (e.g. highlighting, underlining, commenting), fundamental study-related tasks become more difficult. As part of the survey, students were therefore asked to assess to what extent the (temporary) withdrawal of UDE scanning, copying and printing services would be problematic for them: in each case, significantly more than half (printing 55.7%, copying 58.9%) or even almost two thirds of the students (scanning 64.8%) would experience no serious problems as a result. At the same time, the number of students who rated the withdrawal of ser-

Figure 11: Problems if UDE services are unavailable: scanning, copying, printing

How would you assess the statements below for you personally?
If UDE does not provide any ...



vices as (very) problematic is not insignificant (scanning 19.0%, copying 24.6%, printing 29.1%) [see Fig. 11/Table A3.5].

4 Remote teaching and learning? Between motivation and challenge

With the delayed start of the summer semester 2020, an entirely new situation presented itself for the majority of students and teaching staff. After intensive preparations were carried out within a tight time frame, the teaching staff were faced with the challenge of holding their classes in entirely digital formats, irrespective of their previous experience or knowledge with regard to digital teaching and learning formats. At the beginning of the semester, it had not yet been resolved in legal or organisational terms in what form examinations could be conducted. Meanwhile, students were expected to prepare themselves for no longer attending face-to-face classes, meaning they could no longer communicate with their peers, have discussions in seminars or receive advice from teaching staff in the usual way and in close proximity. It was to be expected that these huge changes would be accompanied by fears and concerns on the part of the teaching staff, as well as the students. However, the results of the survey also show that the majority of the students, 77.6 percent, are willing to engage with digital teaching and learning formats more extensively. At the same time, almost three quarters of the students (72.2%) also emphasise the importance of individual consultation with teaching staff, even in remote teaching circumstances [see Fig. 12/Table A4.1].

"[The] learning effect is close to zero because there is no consultation offered, theory isn't underpinned with practical examples and interactive exchanges aren't possible." (2618)

"Online experiences in terms of teaching and learning obviously have advantages (e.g. in crisis situations where it isn't possible to attend educational institutions). Nevertheless, I personally prefer the real-life teaching and learning processes. I think the elements of personal interaction are important. You learn better, there are fewer distractions, your motivation increases, the study rooms create an atmosphere for learning, the reactions of others are important to me (to be able to see them), etc." (2668)

One in every two students has reservations about showing themselves and their personal space in video conferences (54.1%) and expresses concern that opportunities for subject-specific exchange will be limited (54.5%). Equally, one in two also believes that personal communication with fellow students in digital form is only possible to some extent (26.3%) or not at all (24.0%) [see Fig. 12/Table A4.1].

"More work has to be done because lecturers often significantly exceed the lecture time of 90 mins. We have to make do without discussions that usually help a lot with understanding the content." (4314)

"No spontaneous discussions with other students. No face-to-face conversations with the lecturers. No randomly allocated learning groups, for example, where you might make new friends. [...]" (5392)

Students are also concerned about digital examination formats. 47.7 percent believe that they will experience disadvantages as a result. However, one third of the students (32.6%) do not think that digital examinations will result in more disadvantages for them. The question of whether motivation to study will decline if teaching is only offered in digital form showed varying expectations with regard to the new semester, which was still young at the time of the survey. 41.2 percent expect a decline in motivation to study, whilst 40.6 percent do not expect such a situation [see Fig. 12/Table A4.1].

Loss of motivation due to remote teaching?

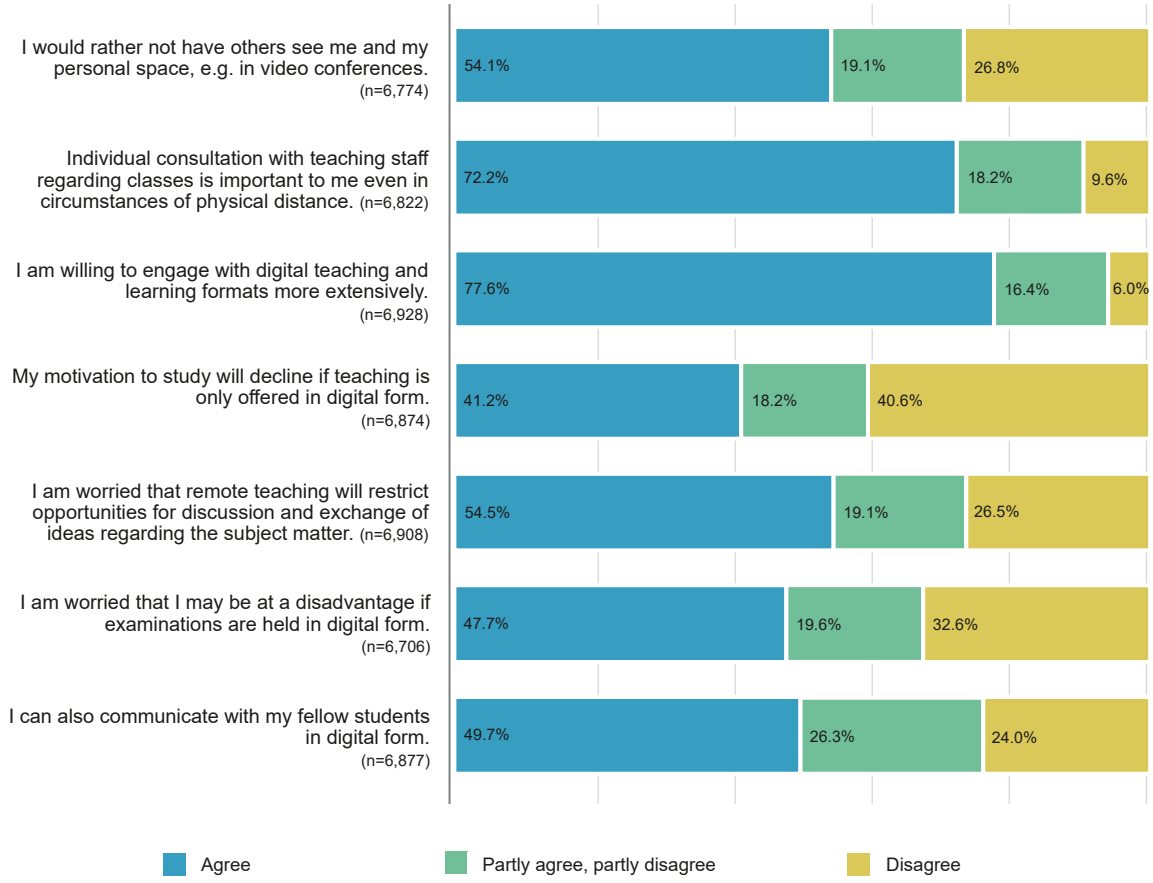
At the same time, there is a strong correlation between this expectation that motivation will decrease and a worry that remote teaching will restrict opportunities for discussion regarding the subject matter ($r=0.609$; $p \leq 0.001$). Students who believe that their motivation to study will decline tend to agree with the statement that subject-specific discussions and exchanges of ideas will decrease due to digital class formats.

"Lacking motivation and lacking tangible study goals. Lacking day-to-day structure." (4139)

"In some classes the lecture handout is simply uploaded without any explanations and then it's much harder for me to grasp the material. In tutorials, personal interaction to solve problems is missing. It's hard to motivate yourself to study when practically your whole life is taking place within one room." (2844)

Figure 12: Attitudes towards the teaching/learning situation in the summer semester 2020

To what extent do you agree with the statements below with regard to your teaching/learning situation in the summer semester 2020?



These students are also less likely to be willing to engage with digital teaching and learning formats (r=-0.451; p≤0.001) and are more worried about being at a disadvantage if examinations are held in digital form (r=0.512; p≤0.001). There is also a positive correlation between the concern that opportunities for discussions regarding the subject matter will be restricted and the concern about being disadvantaged by digital examination formats (r=0.521; p≤0.001), and a negative correlation between the former and the ability to communicate with fellow students in a digital form (r=-0.449; p≤0.001) [see Table A4.2].

Good equipment and experience with online teaching alleviate concerns

It is shown that a greater amount of students who either do not have a notebook/laptop/convertible laptop or desktop computer available to use or who can only use a corresponding device with an inadequate level of performance shy away from visibility in video conferences. Moreover, they worry in higher proportions about limited opportunities for subject-specific exchanges and being at a possible disadvantage due to digital examination formats and expect a decline in their motivation to study to a greater extent. The fact that some students are less willing to participate in video conferences may not only be to do with concerns regarding their private space, but also with insufficient (media) technology equipment. Personal communication with fellow students is more difficult for students who generally need to purchase devices than for those who have all necessary devices. The former are also less willing to engage with digital teaching and learning formats. There is also a connection between the Internet access quality rating and attitudes towards the new teaching and learning situation. Students who have problems with their Internet connection expect disadvantages due to digital examination formats or a decline in their motivation to study to a greater extent [see Table A4.3]. A connection can also

be established between experience with previously used digital teaching and learning tools and expectations for the new teaching and learning situation. Students who are willing to engage more extensively with digital teaching and learning formats, to show themselves and their environment in video conferences and who express less concern about being at a disadvantage or having limited subject-specific exchange are therefore already familiar with more digital teaching and learning formats on average [see Table A4.4].

5 Skills for working with media and software?

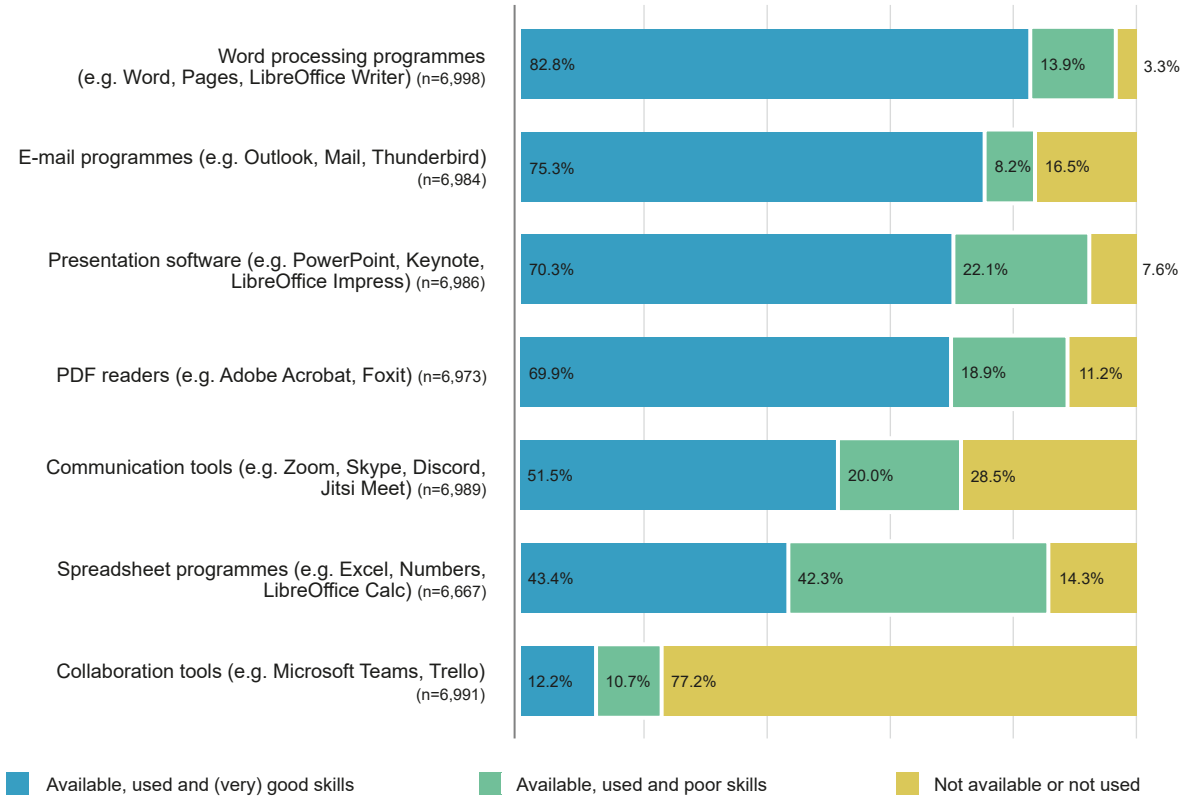
Participating in an online semester requires, amongst other things, skills for using (mobile) media technology devices and programs/apps, as well as safe and responsible Internet conduct. It is expected that smartphones, the Internet and the associated forms of communication and interaction, as well as the use of computers, are integral components of the majority of students' lives and have therefore had a major influence on their socialisation.

Smartphones and Internet as familiar resources

Most of the students can confidently use smartphones and it is only when it comes to managing apps' privacy settings (23.5%) and using smartphones to work with e-books (25.0%) that students say they sometimes have problems. It is interesting that 9.8 percent of respondents are not aware that smartphones can be used to view e-books. Almost all students also state that they are able to perform activities related to Internet use. It is striking that, in each case, over a fifth of the students state that they are only able to consult multiple sources for database research (20.7%) or to differentiate between reliable and unreliable news on the Internet (22.6%) to some extent. Equally, one in ten respondents is only sometimes able to identify advertisements as such (10.1%) or

Figure 13: Available software and subjective rating of software skills

What software is already installed on the devices you currently have access to? Please select all software solutions that are installed on the device from the list below even if you have not used them yet. Multiple selections are allowed. How would you rate your skills using the software below at present?



post content on social networks (12.1%) and therefore actively contribute to them.

Some find it difficult to actively use devices, the Internet and applications

Students rated their own skills at using desktop computers, notebooks, laptops or convertible laptops as comparatively limited. Almost all students (97.4%) are able to use removable media. In comparison, fewer students state that they can create video clips (64.6%), podcasts (33.6%) or screencasts (40.3%). The term screencast is completely unknown to 30.9 percent of respondents. Around one third of respondents can at least to some extent program (34.2%) or design web applications (37.4%), whilst three quarters (75.1%) trust themselves at least to some extent to help out others with computer issues [see Table A5.1]. Even though most students have been acquainted with information technology and the Internet since a young age, it is still the case that not all respondents find it easy to actively use media technology devices, the Internet, and programs/apps. A comparison between genders also shows that women gave their own skills for actively using information technology or creating new formats a lower rating than men [see Table A5.5].

Making hardware work with software

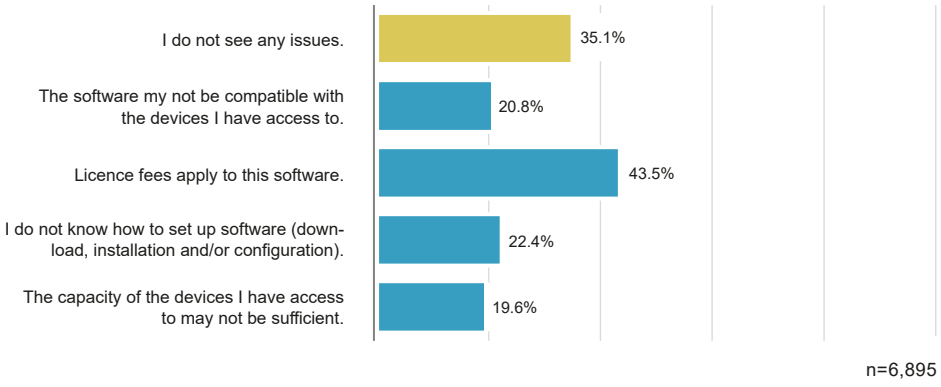
As well as displaying personal competence, the proficient use of software is an indication of methodological skill. As a rule, it is expected that students can deal with common office applications, irrespective of the subject they study. In some cases, learning how to use software and using it are also anchored in the curriculum. Software can assist students in managing and organising their studies or study-related tasks and allows texts and presentations to be created and prepared, data to be gathered and analysed, files to be shared, etc. At the same time, software-specific knowledge is advantageous when students enter the job market after their studies. With particular regard to asynchronous and remote teaching and learning formats, more extensive methodological skills are required, for example to document the results of work. The students were therefore asked to rate their skills at using the software already available to them. In this regard, most of the students (85.6%) rate their knowledge of word processing programs as (very) good, whilst 90.2 percent and 76.1 percent of respondents respectively state they know how to use email programs and presentation software (very) well [see Fig. 13/Table A5.4].

A prerequisite for the use of software is that it is available on the devices the students have access to. Only very few respondents (3.2%) state that they currently have no access to word processing programs. These figures are somewhat higher when it comes to presentation software (7.2%) and spreadsheet programs (10.7%). At the time of the survey, almost three quarters of the students (72.1%) had access to communication tools that are necessary for synchronous participation in classes (e.g. JitsiMeet, BigBlueButton, Zoom). However, tools for collaboration were only available for 27.4 percent of respondents [see Table A5.2].

If students do not have the necessary software, it can be installed subsequently – depending on the device they have access to. For this purpose, UDE offers basic software (e.g. word processing, spreadsheet and presentation programs) and specialised software (e.g. data analysis and image editing programs, development environments) that students can often also use for free at their personal workstation [see Section 3]. The question of whether students might face any difficulties in installing software needed for study-related purposes was answered in the negative by around one third (35.1%) of respondents. 43.5 percent see difficulties due to software licence fees, whilst in each case around one fifth state that they do not know how to set up software (22.4%), that the software may not be compatible with the devices they have access to

Figure 14: Difficulties procuring software needed for study purposes

If you need additional software for study purposes: where do you see potential issues? Multiple selections are allowed.



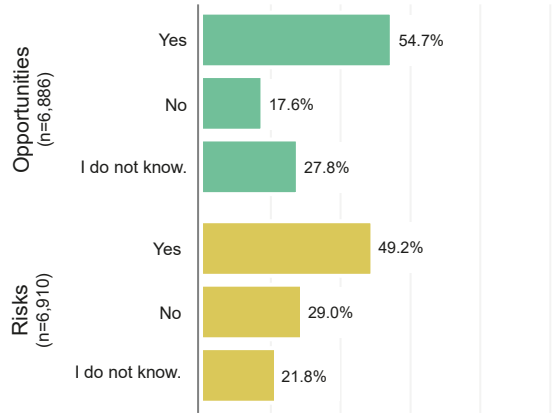
(20.8%) or that the capacity of the devices available may not be sufficient (19.6%) [see Fig. 14/Table 5.3].

6 Remote learning: opportunity or risk?

The need to change classes from predominantly face-to-face to remote formats at short notice, as was necessary in the 2020 summer semester, posed challenges for students and teaching staff. This change can be associated with risks as well as being seen as an opportunity. Students were therefore asked whether they saw any opportunities and/or risks if classes were held exclusively online. The amount of students who see opportunities in this situation is 54.7 percent, whilst 17.6 percent do not see any opportunities and 27.8 percent were unable to give an answer at the time of the survey. The amount of students who see risks is slightly lower at 49.2 percent, whilst 29.0 percent do not see any risks [see Fig. 15/Table A6.1].

Figure 15: Opportunities and risks

Do you see any opportunities/risks if classes are exclusively held online?



Those students who see risks or opportunities were asked what specific risks or opportunities they expect. Due to the large number of responses, some of which were very detailed, it has not yet been possible to complete the analysis of the free-text entries. The absolute numbers for free-text entries on one topic reported in the following are therefore provisional.

It is clear that many students are worried that discussions with teaching staff and fellow students will be made more difficult (over 1,300 free-text entries). They are afraid that this could result in the possibility that course content is not discussed and worked on together, which is counterproductive for understanding [see Section 4]. In addition, students report that they are less able to concentrate due to distractions and they are worried that motivation problems may occur (over 700 free-text entries). A higher workload, subjectively perceived in comparison to face-to-face classes, is also seen as a risk (over 700 free-text entries). In some cases, concern is expressed that digital teaching cannot be implemented well, both from the point of view of content and organisation within a class and with regard to other classes within a study programme/module (over 500 free-text entries). Another area that is often named is examinations. Here the concern is that examinations will not be able to be held, that exam preparation does not go as well as it could and/or that marks could end up being worse (over 300 free-text entries).

Many respondents see major opportunities in the fact that more and better digital teaching formats could be available even after the end of the SARS-CoV-2 pandemic – also as a complement to face-to-face teaching (over 500 free-text entries). This increases flexibility in terms of time and space, boosts students' autonomy (over 600 free-text entries) and makes it easier to achieve a balance between their studies and private life (over 150 free-text entries). Due to time not being needed for travelling, time could also be gained for tasks directly related to their studies (over 300 free-text entries). The provision of lecture recordings in particular is welcomed by many students (over 250 free-text entries).

"If the equipment and experience were available, it would be great. No more need for [...] irritating commuting. [...] By using asynchronous formats, you can really make the most of your own learning speed (e.g. 2x speed for basic or introductory lectures). Overlaps are drastically reduced (because some things are taking place asynchronously). In short: ASYNCHRONOUS e-learning is really amazing. Online lectures, however, are really challenging." (4797)

"I live 2 hours away from the uni. By being able to follow classes online, huge amounts of time are made available to me which I can use for exam preparation, etc." (4218)

"Studying can eventually offer the required advantages for those who work or are single parents, for example." (7546)

Outlook

The student survey on media technology equipment in the 2020 summer semester has given UDE many new insights. The first analyses produced following the end of the field period were discussed within, amongst others, the task force for teaching and learning and were therefore immediately taken into account for the design of the online semester.

As part of this, an important field of development was supporting asynchronous forms of teaching and learning. Together with setting up a hotline for teaching staff, new services and tutorials were intended to ensure as many classes as possible could benefit from asynchronous forms of teaching and learning, allowing students a more flexible form of studying in view of their Internet access and organisational possibilities (e.g. with teaching videos, class recordings and self-study materials).

Particular attention was also paid to developing examination formats. On the basis of North Rhine-Westphalia's Corona Epidemic University Ordinance, a comprehensive free-attempt regulation (i.e. that failed attempts of examinations do not count towards the maximum number of attempts allowed) was implemented in order to take account of the new situation and the students' concerns. With regard to purely digital examination forms, take-home exams were developed that allow students to work predominantly asynchronously on assignments issued online within a predefined time period (e.g. 24 hours) and that therefore seem more compatible with the current situation and the equipment students have access to.

Students with caregiving duties had the opportunity to apply for a financial grant from an equal opportunities fund in order to somewhat compensate financial losses incurred as part of the coronavirus crisis. In cooperation with the AStA student council, a device loan service is also being set up in order to provide students in particular need with a quick solution to their media technology equipment problems.

Finally, the survey results also influenced the planning for the winter semester. The data substantiates the impression that social interaction in purely digital formats poses a particular challenge. Special attention is therefore to be paid to discussions amongst students and with teaching staff when planning teaching in the winter semester.

The task force for teaching and learning expressed the wish to the ZHQE that students also be surveyed on their current situation and experiences after the end of the summer semester 2020. As the Institute of Applied Statistics (ISTAT) is planning to carry out the project *Erfolgsfaktoren digitaler Hochschullehre* ('Success factors of digital university teaching'; EdiHo) in cooperation with higher education institutions from all over Germany, UDE is currently looking into participating in this. As part of this project, students and teaching staff will be surveyed in autumn 2020 about their experiences during the 2020 summer semester. The topics that are planned to be included in the survey are the implementation of digital teaching/learning and examination formats, the advantages and disadvantages of digital teaching methods, self and time management, and the further development of digital skills.

Beyond the results described in this report, the data available contains possibilities for evaluation that have not yet been used to their full potential. Future analyses will therefore, for example, take a look at possible factors of disadvantage that may arise as a result of disability, chronic illness, caregiving duties, and/or gender. The ZHQE will also make faculty-specific analyses available to each faculty soon. Last but not least, the analysis of the free-text entries that is currently being compiled will be published.

CONTACT INFORMATION

Centre for Quality Enhancement and Teaching Development (ZHQE)

Dipl.- Soz.-Wiss. Karl-Heinz Stammen
karl-heinz.stammen@uni-due.de

Anna Ebert, M.A.
anna.ebert@uni-due.de

Attachments

Table A1.1: Preparedness for the online semester

	%	n
Agree	47.4%	3324
Rather agree	31.6%	2213
Partly agree, partly disagree	14.9%	1044
Rather disagree	4.4%	307
Disagree	1.7%	122
Overall	100%	7010

Considering all media technology devices (hardware) that are currently available to you, to what extent do you agree with the following statement? I assume that I will be able to fulfil all study-related tasks I am required to complete, both online and offline, in the summer semester 2020 using the media technology devices (hardware) that I have access to.

Table A1.2: Purchasing devices for the online semester

	Yes		No		Overall
	%	n	%	n	n
I have purchased one or more media technology devices for this semester because I did not have them.	11.9%	810	88.1%	6022	6832
I have purchased one or more media technology devices for this semester because the quality of the devices I had access to was inadequate.	10.6%	721	89.4%	6063	6784
I am planning to purchase one or more devices for this semester.	18.9%	1278	81.1%	5489	6767
I would need to purchase one or more devices but cannot afford them.	28.4%	1909	71.6%	4824	6733
I have all the devices I need for the online semester.	75.3%	5160	24.7%	1695	6855

How did you prepare for the start of the online semester?

Table A1.3: Need to purchase devices

	%	n
Urgent need	19.4%	1295
Basic need	14.2%	945
No need	66.4%	4432
Overall	100%	6672

This analysis is based on our own calculations from A1.2 'Purchasing devices for the online semester':

Urgent need: if 'I would need to purchase one or more devices but cannot afford them' is selected and 'I have all the devices I need for the online semester' is not;

Basic need: if 'I would need to purchase one or more devices but cannot afford them' is selected or 'I have all the devices I need for the online semester' is not;

No need: if 'I have all the devices I need for the online semester' is selected and 'I would need to purchase one or more devices but cannot afford them' is not.

Table A1.4: Possibility to use the following devices

	Yes, and I am the only one who uses this device.		Yes, but I have to share this device with others or borrow it.		No, I do not have access to such a device.		Overall
	%	n	%	n	%	n	n
Desktop computer (e.g. PC, Mac)	37.6%	2480	12.0%	792	50.4%	3330	6602
Notebook/laptop/convertible laptop (e.g. MacBook Air, Microsoft Surface, Lenovo Yoga)	84.7%	5801	7.7%	526	7.6%	523	6850
Tablet (e.g. iPad, Samsung Galaxy Tab)	45.1%	2907	11.6%	748	43.2%	2785	6440
Webcam (also integrated)	84.1%	5743	5.5%	379	10.4%	707	6829
Microphone (also integrated)	88.9%	6110	5.2%	360	5.8%	400	6870
Earphones or headset	87.1%	5952	5.6%	384	7.3%	498	6834
Smartphone (e.g. iPhone, Samsung Galaxy)	98.6%	6817	0.4%	28	1.0%	66	6911
E-Book reader (e.g. Kindle, tolino)	19.5%	1223	7.0%	439	73.5%	4613	6275
Scanner	43.8%	2940	28.5%	1911	27.7%	1855	6706
Printer	49.3%	3356	33.1%	2252	17.6%	1201	6809

Which of the devices listed below do you own or which can you use for your studies in the summer semester 2020?

Table A1.5: Devices primarily used for study-related activities and learning in the summer semester 2020

	Selected		Not selected		Overall
	%	n	%	n	n
Desktop computer (e.g. PC, Mac)	54.5%	1781	45.5%	1489	3270
Notebook/laptop/convertible laptop (e.g. MacBook Air, Microsoft Surface, Lenovo Yoga)	88.1%	5573	11.9%	752	6325
Tablet (e.g. iPad, Samsung Galaxy Tab)	52.7%	1926	47.3%	1727	3653
Webcam (also integrated)	39.7%	2428	60.3%	3692	6120
Microphone (also integrated)	46.8%	3030	53.2%	3438	6468
Earphones or headset	51.6%	3268	48.4%	3066	6334
Smartphone (e.g. iPhone, Samsung Galaxy)	44.8%	3065	55.2%	3778	6843
E-book reader (e.g. Kindle, tolino)	8.7%	144	91.3%	1516	1660
Scanner	29.0%	1407	71.0%	3442	4849
Printer	52.1%	2922	47.9%	2684	5606

Which of the devices you selected above will you likely use primarily for study-related activities and learning during the summer semester 2020. Multiple selections are allowed.

(Filter: this question/each item was only asked/listed if the respective device was available (A1.4).)

Table A1.6: Performance of the devices students have access to

	I assume the device will largely fulfil the technical requirements.		I assume that there will be issues using this device (e.g. due to the age of the device or as a result of damage).		I could not tell at this point.		Overall
	%	n	%	n	%	n	n
Desktop computer (e.g. PC, Mac)	76.6%	2471	17.1%	552	6.3%	202	3225
Notebook/laptop/convertible laptop (e.g. MacBook Air, Microsoft Surface, Lenovo Yoga)	77.4%	4871	18.7%	1178	3.8%	241	6290
Tablet (e.g. iPad, Samsung Galaxy Tab)	71.4%	2579	22.3%	805	6.3%	226	3610
Webcam (also integrated)	81.9%	4978	13.1%	798	5.0%	301	6077
Microphone (also integrated)	84.1%	5397	11.7%	748	4.2%	272	6417
Earphones or headset	86.7%	5451	9.6%	604	3.7%	231	6286
Smartphone (e.g. iPhone, Samsung Galaxy)	83.8%	5694	13.5%	916	2.7%	181	6791
E-book reader (e.g. Kindle, tolino)	68.0%	1119	17.1%	282	14.8%	244	1645
Scanner	77.4%	3730	17.2%	829	5.4%	262	4821
Printer	73.1%	4075	22.0%	1226	4.9%	272	5573

How would you rate the performance of the devices that you have access to?

(Filter: this question/each item was only asked/listed if the respective device was available (A1.4).)

Table A1.7: Device use and performance

	Device not available.		Device available but not used.		The performance of the device available is poor or cannot be assessed.		The performance of the device available is good.		Overall
	%	n	%	n	%	n	%	n	n
Desktop computer (e.g. PC, Mac)	50.5%	3330	22.6%	1489	3.5%	234	23.4%	1542	6595
Notebook/laptop/convertible laptop (e.g. MacBook Air, Microsoft Surface, Lenovo Yoga)	7.7%	523	11.0%	752	16.5%	1128	64.8%	4422	6825
Tablet (z. B. iPad, Samsung Galaxy Tab)	45.2%	2785	28.0%	1727	6.0%	370	20.7%	1278	6160
Webcam (also integrated)	10.4%	707	54.2%	3692	4.3%	295	31.1%	2118	6812
Microphone (also integrated)	5.8%	400	50.2%	3438	5.4%	368	38.6%	2642	6848
Earphones or headset	7.3%	498	45.0%	3066	4.3%	293	43.4%	2958	6815
Smartphone (e.g. iPhone, Samsung Galaxy)	1.0%	66	54.8%	3778	5,7%	392	38.5%	2652	6888
E-book reader (e.g. Kindle, tolino)	73.5%	4613	24.2%	1516	0.4%	25	1,9%	118	6272
Scanner	27.7%	1855	51.4%	3442	3.5%	236	17.4%	1162	6695
Printer	17.7%	1201	39.5%	2684	9.7%	656	33.2%	2252	6793

This analysis is based on our own calculations from A1.4 ‘Possibility to use the following devices’, A1.5 ‘Devices primarily used for study-related activities and learning in the summer semester 2020’, and A1.6 ‘Performance of the devices students have access to’:

Device not available: if ‘no, I do not have access to such a device’ is selected in A1.4 for the respective device;

Device available but not used: if the respective device is not selected in A1.5;

The performance of the device available is poor or cannot be assessed: if ‘I assume that there will be issues using this device (e.g. due to the age of the device or as a result of damage).’ or ‘I could not tell at this point’ is selected in A1.6 with regard to the device;

The performance of the device available is good: if ‘I assume the device will largely fulfil the technical requirements’ is selected in A1.6 with regard to the device.

Table A1.8: Possibility to use a desktop computer and/or notebook/laptop/convertible laptop

	%	n
Yes, and I am the only one who uses this device	91.8%	6414
Yes, but I have to share this device with others or borrow it	6.7%	466
No, I do not have access to such a device	1.5%	108
Overall	100%	6988

This analysis is based on our own calculations from A1.4 ‘Possibility to use the following devices’:

Yes, and I am the only one who uses this device: if *desktop computer (e.g. PC, Mac)* or *notebook/laptop/convertible laptop (e.g. MacBook Air, Microsoft Surface, Lenovo Yoga)* is selected with ‘yes, and I am the only one who uses this device’;

Yes, but I have to share this device with others or borrow it: if *desktop computer (e.g. PC, Mac)* or *notebook/laptop/convertible laptop (e.g. MacBook Air, Microsoft Surface, Lenovo Yoga)* is selected with ‘yes, but I have to share this device with others or borrow it’ and ‘yes, and I am the only one who uses this device’ is not selected for either;

No, I do not have access to such a device: if *desktop computer (e.g. PC, Mac)* and *notebook/laptop/convertible laptop (e.g. MacBook Air, Microsoft Surface, Lenovo Yoga)* are selected with ‘no, I do not have access to such a device’.

Table A1.9: Possibility to use a mobile device (smartphone/tablet/e-book reader without a notebook or similar)

	%	n
Possibility to use only a mobile device (smartphone/tablet/e-book reader)	1.5%	104
Possibility to use a mobile device and a desktop computer and/or notebook or similar	97.9%	6769
No possibility to use a mobile device	0.6%	40
Overall	100%	6913

This analysis is based on our own calculations from A1.4 'Possibility to use the following devices':

Possibility to use only a mobile device (smartphone/tablet/e-book reader): if *tablet (e.g. iPad, Samsung Galaxy Tab)* or *smartphone (e.g. iPhone, Samsung Galaxy)* or *e-book reader (e.g. Kindle, tolino)* is selected with 'yes, and I am the only one who uses this device' or 'yes, but I have to share this device with others or borrow it' and *desktop computer (e.g. PC, Mac)* and *notebook/laptop/convertible laptop (e.g. MacBook Air, Microsoft Surface, Lenovo Yoga)* are selected with 'no, I do not have access to such a device';

Possibility to use a mobile device and a desktop computer and/or notebook or similar: if *tablet (e.g. iPad, Samsung Galaxy Tab)* or *smartphone (e.g. iPhone, Samsung Galaxy)* or *e-book reader (e.g. Kindle, tolino)* and *desktop computer (e.g. PC, Mac)* or *notebook/laptop/convertible laptop (e.g. MacBook Air, Microsoft Surface, Lenovo Yoga)* are selected with 'yes, and I am the only one who uses this device' or 'yes, but I have to share this device with others or borrow it';

No possibility to use a mobile device: if *tablet (e.g. iPad, Samsung Galaxy Tab)* and *smartphone (e.g. iPhone, Samsung Galaxy)* and *e-book reader (e.g. Kindle, tolino)* are selected with 'I do not have access to such a device'

Table A1.10: Possibility to use a webcam/microphone/earphones

	%	n
I do not have any of the three devices and cannot borrow them.	1.1%	76
I do not have one or two of these devices and cannot borrow them.	14.7%	990
I have to borrow at least one of these devices.	11.0%	740
I have all three devices.	73.2%	4927
Overall	100%	6733

This analysis is based on our own calculations from A1.4 'Possibility to use the following devices':

I do not have any of the three devices and cannot borrow them: if *webcam (also integrated)* and *microphone (also integrated)* and *earphones or headset* are selected with 'no, I do not have access to such a device';

I do not have one or two of these devices and cannot borrow them: if *webcam (also integrated)* or *microphone (also integrated)* or *earphones or headset* is selected with 'no, I do not have access to such a device';

I have to borrow at least one of these devices: if *webcam (also integrated)* or *microphone (also integrated)* or *earphones or headset* is selected with 'yes, but I have to share this device with others or borrow it';

I have all three devices: if *webcam (also integrated)* and *microphone (also integrated)* and *earphones or headset* are selected with 'yes, and I am the only one who uses this device'.

Table A1.11: Use of an external monitor

	%	n
Yes	20.5%	1141
No	79.5%	4412
Overall	100%	5553

Do you use an (additional) external monitor when you work with a notebook/laptop/convertible laptop?

(Filter: this question was only asked if use of a notebook/laptop/convertible laptop was stated (A1.5).)

Table A1.12: Screen size of the device primarily used

		%	n
Notebooks/laptops/ convertible laptops	Up to 12 inches/up to 30.5 cm	16.5%	810
	Between 13 and 17 inches/ between 30.6 cm and 43.2 cm	76.4%	3749
	18 inches/43.3 cm or more	7.1%	350
	Overall	100.0%	4909
Tablet PCs	Up to 7 inches/up to 17.8 cm	8.1%	136
	Between 8 and 9 inches/ between 20.3 cm and 22.9 cm	28.1%	473
	Between 10 and 11 inches/ between 25.4 cm and 27.9 cm	51.6%	868
	12 inches/30.5 cm or more	12.1%	204
	Overall	100.0%	1681

Please specify the screen size (diagonal) of your [device type]. If you do not know the size in inches, please measure or estimate the screen diagonal in centimetres (cm).

(Filter: this question/each item was only asked/listed if the respective device was used (A1.5).)

Table A1.13: Operating system of the device primarily used

		%	n
Desktop computers	Microsoft Windows	84.5%	1499
	Apple macOS	13.5%	240
	Linux or other	2.0%	35
	Overall	100.0%	1774
Notebooks/laptops/ convertible laptops	Microsoft Windows	73.3%	4048
	Apple macOS	25.3%	1397
	Linux or other	1.4%	79
	Overall	100.0%	5524
Tablet PCs	Microsoft Windows	11.5%	220
	Apple iOS	69.9%	1338
	Android	17.8%	341
	FireOS	0.6%	11
	Linux or other	0.2%	3
	Overall	100.0%	1913
Smartphone operating system	Apple iOS	48.3%	1446
	Android	51.4%	1538
	Other	0.3%	9
	Overall	100.0%	2993

Please specify the operating system of your [device type] .

(Filter: this question/each item was only asked/listed if the respective device was used (A1.5).)

Table A2.1: Internet access

	Selected		Not selected		Overall
	%	n	%	n	n
Permanent landline connection from a telecommunications service provider (e.g. DSL, cable, fibre optic cable) (irrespective of whether you access via cable or WLAN)	87.3%	6108	12.7%	888	6996
LAN connection in student residences or another non-mobile, permanent connection (irrespective of whether you access via cable or WLAN)	16.8%	1172	83.2%	5824	6996
Mobile data connection via a smartphone or an Internet stick	65.7%	4599	34.3%	2397	6996
Permanent connection via the mobile network (e.g. Telekom Speedbox, Vodafone Gigacube)	14.9%	1044	85.1%	5952	6996
WLAN connections provided by a third party for which you have no influence on availability (e.g. university WLAN, Freifunk)	10.7%	746	89.3%	6250	6996

Which options to access the Internet are available to you for completing study-related tasks and learning? Multiple selections are allowed.

Table A2.2: Most frequently used Internet access option

	%	n
Permanent landline connection from a telecommunications service provider	81.6%	5701
LAN connection in student residences or another non-mobile, permanent connection	10.0%	699
Mobile data connection via a smartphone or an Internet stick	3.4%	240
Permanent connection via the mobile network	2.8%	198
WLAN connections provided by a third party for which you have no influence on availability	2.1%	149
Overall	100%	6987

And which of these options will you probably most frequently use for study-related activities and learning in the summer semester 2020?

Table A2.3: Capacity issues in Internet access

	%	n
Never	23.0%	1515
Once per week at most	39.7%	2616
Multiple times per week	24.9%	1642
Once per day	4.3%	281
Multiple times per day	8.1%	536
Overall	100%	6590

How frequently do situations occur where your Internet access capacity is curbed, preventing you from performing study-related activities, e.g. because you share the connection with others (e.g. family, student residence, housemates) or due to downtimes caused by the provider?

Table A2.4: Mobile phone plan quality

	%	n
Agree	23.7%	1110
Rather agree	29.1%	1364
Partly agree, partly disagree	22.5%	1053
Rather disagree	14,5%	679
Disagree	10.2%	479
Overall	100%	4685

I believe that the quality of my mobile phone plan (network coverage and/or speed of data connection) is sufficient for completing study-related activities online.

Table A2.5: Adequacy of media technology equipment and available bandwidth for study-related activities

	Agree		Rather agree		Partly agree, partly disagree		Rather disagree		Disagree		Overall
	%	n	%	n	%	n	%	n	%	n	n
I assume that I will be able to participate in web-based audio/video conferences (e.g. Jitsi, BigBlueButton, Zoom) using the media technology equipment I have access to (hardware and software).	54.0%	3728	30.4%	2097	11.0%	757	3.3%	231	1.3%	90	6903
I assume that the bandwidth (speed) available to me and my data allowance are sufficient for carrying out study-related activities (e.g. video/audio streaming, downloading material, participating in video/audio conferences).	44.8%	3085	30.6%	2109	15.7%	1079	6.2%	429	2.7%	185	6887

To what extent do you agree with the statements below?

Table A2.6: Average time per day where it is possible to go online for study-related activities without being disturbed

	%	n
Not at all	1.2%	83
Less than two hours	9.3%	649
Between 2 and under 4 hours	30.0%	2094
Between 4 and under 6 hours	27.2%	1898
Between 6 and under 8 hours	14.4%	1004
8 hours or more	17.9%	1252
Overall	100%	6980

On average, how many hours per day do you have the opportunity to go online for study-related activities, e.g. to participate in a webinar or video conference without being disturbed?

Table A2.7: Average time per day where it is possible to go online for study-related activities without being disturbed differentiated by type of disadvantage

		Not at all		Less than two hours		Between 2 and under 4 hours		Between 4 and under 6 hours		Between 6 and under 8 hours		8 hours or more		Overall	Significance test
		%	n	%	n	%	n	%	n	%	n	%	n	n	
Disadvantage (disability/ chronic illness)	No	1.0%	59	8.0%	473	29.2%	1720	27.5%	1621	15.2%	894	19.0%	1120	5887	Chi-Square (5) = 63.24 p = .000
	Yes	2.2%	18	14.1%	118	32.6%	272	26.5%	221	11.0%	92	13.5%	113	834	
Disadvantage (caregiving duties)	No	0.7%	36	5.9%	325	26.8%	1480	28.5%	1572	16,5%	912	21.6%	1193	5518	Chi-Square (5) = 771.99 p = .000
	Yes	3.3%	42	22.7%	286	43.6%	550	21.4%	270	5.8%	73	3.2%	41	1262	

On average, how many hours per day do you have the opportunity to go online for study-related activities, e.g. to participate in a webinar or video conference without being disturbed?

Table A2.8: Technical difficulties when performing study-related activities online

	Selected		Not selected		Overall
	%	n	%	n	n
The bandwidth/speed of the Internet connection available to me is insufficient, e.g. due to bandwidth/speed restrictions.	58.6%	1146	41.4%	811	1957
The data allowance of the Internet connection available to me is insufficient, e.g. due to data allowance restrictions.	29.7%	582	70.3%	1375	1957
The media technology equipment available to me would have to be complemented/extended, namely with: _____	14.5%	284	85,5%	1673	1957
Other	12.2%	238	87,8%	1719	1957
I do not know.	14.4%	282	85.6%	1675	1957

Please give reasons for your response. What impediments are there that keep you from completing study-related activities online from a technical perspective? Multiple selections are allowed

Table A2.9: Bandwidth of the Internet access option used

		%	n
Download	Lower than DSL-16 (download at less than 16 Mbit/s)	11.9%	543
	DSL-16 (download between 16 and under 50 Mbit/s)	31.6%	1446
	DSL-50 (download between 50 and under 100 Mbit/s)	33.2%	1516
	DSL-100 or higher (download at 100 Mbit/s or more)	23.3%	1065
	Overall	100.0%	4570
Upload	Lower than 1 Mbit/s	7.7%	276
	Between 1 and under 4 Mbit/s	26.8%	955
	Between 4 and under 6 Mbit/s	24.4%	869
	6 Mbit/s or higher	41.1%	1466
	Overall	100.0%	3566

Please specify the bandwidth (speed) that is usually available to you for downloading or uploading files.
This information can be found in the relevant contract and in the router settings. Alternatively, you can also measure the bandwidth that is currently available on this website: https://www.speedmeter.de

(Filter: these questions were only asked when the option for Internet access via a permanent landline connection from a *telecommunications service provider* and/or *LAN connection in student residences or another non-mobile, permanent connection* was selected (A2.1).)

Table A.3.1: Previous use of digital teaching and learning tools

	Selected		Not selected		Overall
	%	n	%	n	n
Asynchronous collaboration/collaboration platforms on the Internet using Sciebo or BSCW	15.8%	1104	84.2%	5898	7002
Audio and video conferences or online meetings using Adobe Connect, BigBlueButton (BBB), Jitsi Meet or Zoom	63.5%	4444	36.5%	2558	7002
JACK e-assessments	16.7%	1167	83.3%	5835	7002
LPLUS e-assessments	1.8%	123	98.2%	6879	7002
Mahara e-portfolio system	1.4%	98	98.6%	6904	7002
Lecture hall polls/live voting using PINGO	20.0%	1402	80.0%	5600	7002
Interactive Slides E-Books (ISEB)	3.8%	268	96.2%	6734	7002
Teaching videos on Opencast, DuEPublico or via Moodle	54.7%	3828	45.3%	3174	7002
Moodle learning platform	87.9%	6158	12.1%	844	7002
Other learning platforms such as ILIAS	6.1%	428	93.9%	6574	7002
Messenger (Jabber, Rocket.Chat)	1.9%	130	98.1%	6872	7002
Online reserve collections	53.3%	3733	46.7%	3269	7002
Tools offered by UDE overall	**98.0%**	**6865**	**2.0%**	**137**	**7002**
Other asynchronous collaboration/collaboration platforms on the Internet using Mattermost, Slack, Trello, Evernote or Microsoft Teams, for example	15.6%	1089	84.4%	5913	7002
Other audio and video conferences or online meetings using Skype, Discord or Mumble, for example	24.3%	1698	75.7%	5304	7002
Professional networks (e.g. LinkedIn, Xing)	8.2%	571	91.8%	6431	7002
Filesharing (e.g. Nextcloud, DropBox, GoogleDrive etc.)	27.7%	1937	72.3%	5065	7002
Other lecture hall polls/live voting using Mentimeter or Tweedback, for example	13.6%	949	86.4%	6053	7002
Teaching videos on other platforms such as YouTube or Twitch	40.7%	2850	59.3%	4152	7002
Other messengers (e.g. WhatsApp, Signal, Telegram, Threema)	34.5%	2415	65.5%	4587	7002
MOOCs (e.g. Coursera, OpenCourseWorld)	1.6%	114	98.4%	6888	7002
Social media (e.g. Facebook, Jodel)	24.8%	1737	75.2%	5265	7002
Online forums (apart from Moodle or ILIAS)	7.0%	492	93.0%	6510	7002
External tools overall	**72.2%**	**5055**	**27.8%**	**1947**	**7002**
Tools overall	**99.1%**	**6941**	**0.9%**	**61**	**7002**
Other	2.1%	144	97.9%	6858	7002
None of the above	0.9%	61	99.1%	6941	7002

Which of the applications and/or teaching and learning tools listed below have you used in the context of classes before or which have been used in classes you attended – irrespective of the semester? Multiple selections are allowed.

Table A3.2: Number of tools used

	M	SD	Mdn	Min.	Max.	n
Number of teaching and learning tools previously used	5.3	2.88	5	0	21	7002
Number of teaching and learning tools previously used that are offered by UDE	3.3	1.56	3	0	12	7002
Number of teaching and learning tools previously used that are not offered by UDE	2.0	1.99	1	0	10	7002

The responses from A3.1 ‘Previous use of digital teaching and learning tools’ were added to create this analysis.
(M: arithmetic mean; SD: standard deviation; Mdn: median; Min.: minimum; Max.: maximum)

Table A3.3: Knowledge and use of UDE services

	Yes, I am aware of this service and use it.		Yes, I am aware of this service, but I do not use it yet.		No, I am not aware of this service.		Overall
	%	n	%	n	%	n	n
VPN	63.8%	4471	17.1%	1195	19.1%	1337	7003
Campus and state licence agreements	53.3%	3380	11.4%	721	35.4%	2243	6344
VDI	9.2%	642	17.6%	1235	73.2%	5125	7002

Are you aware that UDE provides [service type] and do you use it?

Table A3.4: Knowledge and use of UDE services differentiated by degree type and semester

		Yes, I am aware of this service and use it.		Yes, I am aware of this service, but I do not use it yet.		No, I am not aware of this service.		Overall	Significance test
		%	n	%	n	%	n	n	
VPN									
Type of degree	Bachelor	56.4%	1896	19.4%	652	24.3%	816	3364	Chi-Square (8) = 220.821 p = .000
	Bachelor with teaching qualification	64,8%	890	18.0%	248	17.2%	236	1374	
	Master	73.3%	1037	12.4%	175	14.3%	203	1415	
	Master with teaching qualification	75.8%	439	14.7%	85	9.5%	55	579	
	State examination	81.4%	188	11.3%	26	7.4%	17	231	
Semester	1-2	59.7%	1191	18.1%	362	22.2%	442	1995	Chi-Square (6) = 40.424 p = .000
	3-4	62.8%	1144	17.2%	314	20.0%	364	1822	
	5-6	68.6%	843	15.7%	193	15.7%	193	1229	
	7 or higher	67.5%	1131	15.8%	264	16.8%	281	1676	
Type of degree & semester	Bachelor (semester 1-2)	50.6%	583	21.0%	242	28.4%	328	1153	Chi-Square (6) = 220.955 p = .000
	Master/State examination (semester 1-2)	72.3%	608	14.3%	120	13.4%	113	841	
	Bachelor (semester >= 3)	62.0%	2108	17.9%	610	20.1%	684	3402	
	Master/State examination (semester >= 3)	76.6%	999	11.9%	155	11.5%	150	1304	
Campus and state licence agreements									
Type of degree	Bachelor	51.6%	1572	12.1%	369	36.3%	1105	3046	Chi-Square (8) = 175,371 p = .000
	Bachelor with teaching qualification	43.9%	527	8.5%	102	47,6%	571	1200	
	Master	64.0%	855	12.9%	172	23.1%	309	1336	
	Master with teaching qualification	56.4%	291	9.1%	47	34.5%	178	516	
	State examination	55.5%	116	12,4%	26	32.1%	67	209	
Semester	1-2	48.3%	872	11.9%	215	39.8%	718	1805	Chi-Square (6) = 34.825 p = .000
	3-4	54.5%	893	10.9%	178	34.7%	569	1640	
	5-6	56.9%	638	9.9%	111	33.2%	372	1121	
	7 or higher	55.9%	862	12.3%	189	31.8%	490	1541	
Type of degree & semester	Bachelor (semester 1-2)	40.5%	414	12.4%	127	47.1%	482	1023	Chi-Square (6) = 147.351 p = .000
	Master/State examination (semester 1-2)	58.6%	458	11.3%	88	30.1%	235	781	
	Bachelor (semester >= 3)	52.7%	1617	10.7%	328	36.7%	1126	3071	
	Master/State examination (semester >= 3)	63.2%	766	12,0%	146	24.8%	300	1212	
VDI									
Type of degree	Bachelor	9.0%	302	19.7%	661	71.4%	2399	3362	Chi-Square (8) = 223.937 p = .000
	Bachelor with teaching qualification	5.4%	74	11.1%	153	83.5%	1148	1375	
	Master	14.4%	204	23,2%	329	62.4%	883	1416	
	Master with teaching qualification	8.3%	48	11.6%	67	80.0%	461	576	
	State examination	3.9%	9	6.1%	14	90.0%	208	231	
Semester	1-2	9.3%	186	17.4%	348	73.3%	1463	1997	Chi-Square (6) = 8.032 p = .000
	3-4	8.6%	156	16.9%	308	74.5%	1357	1821	
	5-6	9.0%	111	16.7%	205	74.2%	911	1227	
	7 or higher	9.8%	164	19.5%	327	70.7%	1185	1676	
Type of degree & semester	Bachelor (semester 1-2)	8.3%	96	16.7%	193	75.0%	865	1154	Chi-Square (6) = 30.866 p = .000
	Master/State examination (semester 1-2)	10,7%	90	18.4%	155	70.9%	597	842	
	Bachelor (semester >= 3)	7.9%	268	17.3%	590	74.8%	2543	3401	
	Master/State examination (semester >= 3)	12.4%	161	18.7%	243	69.0%	898	1302	

Table A3.5: Problems if UDE services are unavailable: scanning, copying, printing

If UDE does not provide any ...	Unproblematic		Rather unproblematic		Partly problematic, partly unproblematic		Rather problematic		Problematic		Overall
	%	n	%	n	%	n	%	n	%	n	n
Scanning opportunities, to me, this is ...	40.4%	2824	24.4%	1706	16.1%	1126	11,8%	825	7.2%	506	6987
Copying opportunities, to me, this is ...	36.3%	2537	22.6%	1578	16.5%	1155	14.9%	1043	9.7%	679	6992
Printing opportunities, to me, this is ...	36.0%	2524	19.7%	1377	15.1%	1060	15.4%	1081	13.7%	960	7002

How would you assess the statements below for you personally?

Table A4.1: Attitudes towards the teaching/learning situation in the summer semester 2020

	Agree		Rather agree		Partly agree, partly disagree		Rather disagree		Disagree		Overall
	%	n	%	n	%	n	%	n	%	n	n
I would rather not have others see me and my personal space, e.g. in video conferences.	32.5%	2203	21.6%	1465	19.1%	1291	14.3%	970	12.5%	845	6774
Individual consultation with teaching staff regarding classes is important to me even in circumstances of physical distance.	40.5%	2762	31.7%	2164	18.2%	1242	6.8%	464	2.8%	190	6822
I am willing to engage with digital teaching and learning formats more extensively.	42.3%	2929	35.3%	2444	16.4%	1138	4.5%	310	1.5%	107	6928
My motivation to study will decline if teaching is only offered in digital form.	23.5%	1615	17.7%	1217	18.2%	1252	16.6%	1143	24.0%	1647	6874
I am worried that remote teaching will restrict opportunities for discussion and exchange of ideas regarding the subject matter.	30.3%	2092	24.2%	1671	19.1%	1317	14.5%	1004	11,9%	824	6908
I am worried that I may be at a disadvantage if examinations are held in digital form.	29.3%	1966	18.4%	1234	19.6%	1317	17.4%	1170	15.2%	1019	6706
I can also communicate with my fellow students in digital form.	25.6%	1763	24.1%	1657	26.3%	1808	16.6%	1143	7.4%	506	6877

To what extent do you agree with the statements below with regard to your teaching/learning situation in the summer semester 2020?

Table A4.2: Attitudes towards the teaching/learning situation in the summer semester 2020: Pearson correlation coefficient

	Individual consultation with teaching staff regarding classes is important to me even in circumstances of physical distance.	I am willing to engage with digital teaching and learning formats more extensively.	My motivation to study will decline if teaching is only offered in digital form.	I am worried that remote teaching will restrict opportunities for discussion and exchange of ideas regarding the subject matter.	I am worried that I may be at a disadvantage if examinations are held in digital form.	I can also communicate with my fellow students in digital form.
I would rather not have others see me and my personal space, e.g. in video conferences.	-.007 p = .595 n = 6634	-0.158*** n = 6731	0.164*** n = 6679	0.131*** n = 6712	0.213*** n = 6522	-0.135*** n = 6679
Individual consultation with teaching staff regarding classes is important to me even in circumstances of physical distance.		-0.039*** n = 6786	0.243*** n = 6732	0.336*** n = 6770	0.2459*** n = 6576	-0.141*** n = 6729
I am willing to engage with digital teaching and learning formats more extensively.			-0.451*** n = 6827	-0.316*** n = 6863	-0.302*** n = 6663	0.356*** n = 6834
My motivation to study will decline if teaching is only offered in digital form.				0.609*** n = 6812	0.512*** n = 6633	-0.434*** n = 6779
I am worried that remote teaching will restrict opportunities for discussion and exchange of ideas regarding the subject matter.					0.521*** n = 6654	-0.448*** n = 6814
I am worried that I may be at a disadvantage if examinations are held in digital form.						-0.341*** n = 6619

***: p ≤ .001

Table A4.3: Attitudes towards the teaching/learning situation in the summer semester 2020 differentiated by technical equipment

		Agree		Partly agree, partly disagree		Disagree		Overall	Significance test
		%	n	%	n	%	n	n	
I would rather not have others see me and my personal space, e.g. in video conferences.									
I have all the devices I need for the online semester.	Yes	50.3%	2516	19.6%	981	30.0%	1501	4998	Chi-Square (2) = 134.129 p = .000
	No	65.9%	1072	16.8%	274	17.3%	281	1627	
Capacity issues	Never	44.5%	652	20.5%	301	35.0%	513	1466	Chi-Square (8) = 149.212 p = .000
	Once per week at most	50.9%	1297	20.6%	525	28.5%	725	2547	
	Multiple times per week	62.6%	995	16.8%	267	20.6%	328	1590	
	Once per day	53.7%	146	19.1%	52	27.2%	74	272	
	Multiple times per day	65.7%	331	15.9%	80	18.5%	93	504	
Individual consultation with teaching staff regarding classes is important to me even in circumstances of physical distance.									
I have all the devices I need for the online semester.	Yes	70.8%	3565	18.6%	938	10.6%	532	5035	Chi-Square (2) = 24.612 p = .000
	No	76.0%	1247	17.2%	282	6.8%	111	1640	
Capacity issues	Never	66.1%	970	20.6%	302	13.4%	196	1468	Chi-Square (8) = 48.3025 p = .000
	Once per week at most	73.0%	1871	17.6%	451	9.4%	241	2563	
	Multiple times per week	74.9%	1195	17.7%	282	7.5%	119	1596	
	Once per day	75.3%	210	16.5%	46	8.2%	23	279	
	Multiple times per day	75.6%	388	16.4%	84	8.0%	41	513	
I am willing to engage with digital teaching and learning formats more extensively.									
I have all the devices I need for the online semester.	Yes	81.0%	4144	14.4%	736	4.6%	234	5114	Chi-Square (2) = 149.608 p = .000
	No	67.3%	1121	22.2%	370	10.5%	174	1665	
Capacity issues	Never	84.5%	1268	11.7%	176	3.7%	56	1500	Chi-Square (8) = 127.530 p = .000
	Once per week at most	81.1%	2106	14.4%	375	4.4%	115	2596	
	Multiple times per week	72.9%	1180	19.6%	318	7.5%	121	1619	
	Once per day	72.2%	203	20.3%	57	7.5%	21	281	
	Multiple times per day	66.9%	348	22.5%	117	10.6%	55	520	
My motivation to study will decline if teaching is only offered in digital form.									
I have all the devices I need for the online semester.	Yes	36.1%	1830	18.3%	926	45.6%	2308	5064	Chi-Square (2) = 246.992 p = .000
	No	56.2%	932	18.4%	305	25.4%	422	1659	
Capacity issues	Never	27.9%	417	15.8%	236	56.3%	840	1493	Chi-Square (8) = 272.446 p = .000
	Once per week at most	39.2%	1005	19.7%	506	41.1%	1055	2566	
	Multiple times per week	47.4%	764	18.7%	302	33.9%	547	1613	
	Once per day	54.5%	152	17.6%	49	28.0%	78	279	
	Multiple times per day	56.3%	292	16.8%	87	27.0%	140	519	
I am worried that remote teaching will restrict opportunities for discussion and exchange of ideas regarding the subject matter.									
I have all the devices I need for the online semester.	Yes	49.8%	2539	20.3%	1034	29.9%	1522	5095	Chi-Square (2) = 180.91 p = .000
	No	68.4%	1139	15.1%	251	16.6%	276	1666	
Capacity issues	Never	40.4%	602	20.7%	308	39.0%	581	1491	Chi-Square (8) = 263.052 p = .000
	Once per week at most	52.3%	1355	21.2%	549	26.5%	685	2589	
	Multiple times per week	63.3%	1025	16.3%	263	20.4%	330	1618	
	Once per day	67.5%	187	14.8%	41	17.7%	49	277	
	Multiple times per day	68.0%	357	14.5%	76	17.5%	92	525	
I am worried that I may be at a disadvantage if examinations are held in digital form.									

Table A4.3 continued: Attitudes towards the teaching/learning situation in the summer semester 2020 differentiated by technical equipment

I have all the devices I need for the online semester.	Yes	41.6%	2056	20.2%	1000	38.1%	1883	4939	Chi-Square (2) = 308.550 p = .000
	No	65.1%	1058	17.6%	286	17.2%	280	1624	
Capacity issues	Never	34.0%	491	19.0%	275	47.0%	678	1444	Chi-Square (8) = 308.595 p = .000
	Once per week at most	43.4%	1087	21.6%	541	34.9%	874	2502	
	Multiple times per week	55.4%	878	19.9%	316	24.6%	390	1584	
	Once per day	62.2%	168	15.9%	43	21.9%	59	270	
	Multiple times per day	66.3%	338	13.5%	69	20.2%	103	510	
I can also communicate with my fellow students in digital form.									
I have all the devices I need for the online semester.	Yes	54.6%	2769	25.2%	1280	20.2%	1022	5071	Chi-Square (2) = 228.231 p = .000
	No	35.0%	580	29.4%	487	35.6%	589	1656	
Capacity issues	Never	63.0%	936	20.9%	311	16.0%	238	1485	Chi-Square (8) = 221.320 p = .000
	Once per week at most	52.0%	1337	26.5%	682	21.4%	551	2570	
	Multiple times per week	41.4%	669	29.5%	477	29.1%	471	1617	
	Once per day	36.1%	101	30.7%	86	33.2%	93	280	
	Multiple times per day	37.9%	196	29.0%	150	33.1%	171	517	

Table A4.4: Number of teaching and learning tools used differentiated by attitude towards the teaching/learning situation in the summer semester 20200

		M	SD	Mdn	Min.	Max.	n	Correlation*
Number of teaching and learning tools previously used								
I would rather not have others see me and my personal space, e.g. in video conferences.	Agree	4.99	2.70	5	0	17	3660	r = .132 p = .000
	Partly agree, partly disagree	5.53	2.98	5	0	19	1290	
	Disagree	5.76	3.06	5	0	21	1814	
Individual consultation with teaching staff regarding classes is important to me even in circumstances of physical distance.	Agree	5.31	2.88	5	0	18	4920	r = .013 p = .254
	Partly agree, partly disagree	5.12	2.84	5	0	19	1240	
	Disagree	5.50	2.95	5	0	21	652	
I am willing to engage with digital teaching and learning formats more extensively.	Agree	5.52	2.93	5	0	21	5365	r = -.180 p = .000
	Partly agree, partly disagree	4.59	2.45	4	0	16	1137	
	Disagree	4.18	2.74	4	0	14	416	
My motivation to study will decline if teaching is only offered in digital form.	Agree	4.97	2.79	4	0	19	2827	r = .118 p = .000
	Partly agree, partly disagree	5.14	2.76	5	0	16	1250	
	Disagree	5.65	2.98	5	0	21	2787	
I am worried that remote teaching will restrict opportunities for discussion and exchange of ideas regarding the subject matter.	Agree	5.08	2.79	5	0	18	3757	r = .100 p = .000
	Partly agree, partly disagree	5.28	2.82	5	0	19	1316	
	Disagree	5.69	3.06	5	0	21	1825	
I am worried that I may be at a disadvantage if examinations are held in digital form.	Agree	4.91	2.74	4	0	19	3195	r = .143 p = .000
	Partly agree, partly disagree	5.39	2.84	5	0	17	1315	
	Disagree	5.77	3.06	5	0	21	2186	
I can also communicate with my fellow students in digital form.	Agree	5.63	3.00	5	0	21	3417	r = -.144 p = .000
	Partly agree, partly disagree	5.21	2.78	5	0	19	1805	
	Disagree	4.66	2.62	4	0	15	1645	
Number of teaching and learning tools previously used that are offered by UDE								
I would rather not have others see me and my personal space, e.g. in video conferences.	Agree	3.15	1.52	3	0	10	3660	r = .113 p = .000
	Partly agree, partly disagree	3.36	1.61	3	0	12	1290	
	Disagree	3.53	1.57	3	0	11	1814	
Individual consultation with teaching staff regarding classes is important to me even in circumstances of physical distance.	Agree	3.30	1.56	3	0	9	4920	r = .005 p = .000
	Partly agree, partly disagree	3.18	1.57	3	0	12	1240	
	Disagree	3.35	1.55	3	0	11	652	
I am willing to engage with digital teaching and learning formats more extensively.	Agree	3.40	1.55	3	0	12	5365	r = -.168 p = .000
	Partly agree, partly disagree	2.95	1.49	3	0	10	1137	
	Disagree	2.57	1.55	2	0	7	416	
My motivation to study will decline if teaching is only offered in digital form.	Agree	3.11	1.56	3	0	10	2827	r = .118 p = .000
	Partly agree, partly disagree	3.20	1.52	3	0	8	1250	
	Disagree	3.47	1.56	3	0	12	2787	
I am worried that remote teaching will restrict opportunities for discussion and exchange of ideas regarding the subject matter.	Agree	3.16	1.55	3	0	10	3757	r = .099 p = .000
	Partly agree, partly disagree	3.30	1.55	3	0	9	1316	
	Disagree	3.48	1.58	3	0	12	1825	
I am worried that I may be at a disadvantage if examinations are held in digital form.	Agree	3.07	1.54	3	0	10	3195	r = .141 p = .000
	Partly agree, partly disagree	3.33	1.54	3	0	8	1315	
	Disagree	3.54	1.58	3	0	12	2186	
I can also communicate with my fellow students in digital form.	Agree	3.41	1.58	3	0	12	3417	r = -.108 p = .000
	Partly agree, partly disagree	3.29	1.52	3	0	9	1805	
	Disagree	3.01	1.54	3	0	10	1645	

A4.4 continued: Number of teaching and learning tools used differentiated by attitude towards the teaching/learning situation in the summer semester 2020

		M	SD	Mdn	Min.	Max.	n	Correlation*
Number of teaching and learning tools previously used that are not offered by UDE								
I would rather not have others see me and my personal space, e.g. in video conferences.	Agree	1.82	1.89	1	0	10	3660	r = .100 p = .000
	Partly agree, partly disagree	2.14	2.07	2	0	10	1290	
	Disagree	2.21	2.12	2	0	9	1814	
Individual consultation with teaching staff regarding classes is important to me even in circumstances of physical distance.	Agree	1.99	2.00	1	0	10	4920	r = .015 p = .000
	Partly agree, partly disagree	1.92	1.96	1	0	10	1240	
	Disagree	2.13	2.04	2	0	9	652	
I am willing to engage with digital teaching and learning formats more extensively.	Agree	2.09	2.05	2	0	10	5365	r = -.128 p = .000
	Partly agree, partly disagree	1.63	1.68	1	0	9	1137	
	Disagree	1.58	1.86	1	0	8	416	
My motivation to study will decline if teaching is only offered in digital form.	Agree	1.85	1.92	1	0	10	2827	r = .077 p = .000
	Partly agree, partly disagree	1.92	1.96	1	0	10	1250	
	Disagree	2.15	2.07	2	0	9	2787	
I am worried that remote teaching will restrict opportunities for discussion and exchange of ideas regarding the subject matter.	Agree	1.90	1.93	1	0	10	3757	r = .066 p = .000
	Partly agree, partly disagree	1.95	1.97	1	0	10	1316	
	Disagree	2.18	2.12	2	0	9	1825	
I am worried that I may be at a disadvantage if examinations are held in digital form.	Agree	1.82	1.90	1	0	10	3195	r = .096 p = .000
	Partly agree, partly disagree	2.05	1.98	2	0	9	1315	
	Disagree	2.21	2.13	2	0	9	2186	
I can also communicate with my fellow students in digital form.	Agree	2.20	2.09	2	0	9	3417	r = -.122 p = .000
	Partly agree, partly disagree	1.90	1.95	1	0	10	1805	
	Disagree	1.64	1.78	1	0	10	1645	

The responses from A3.1 ‘Previous use of digital teaching and learning tools’ were added to create this analysis.
*Pearson correlation coefficient
(M: arithmetic mean; SD: standard deviation; Mdn: median; Min.: minimum; Max.: maximum)

Table A5.1: Knowledge of media technology applications

I am able to...	Yes		To some extent		No		I do not know this field of application.		Overall
	%	n	%	n	%	n	%	n	n
...install and/or update apps on a smartphone.	90.5%	6325	7.4%	519	1.4%	101	0.6%	41	6986
...manage the data protection settings of apps on a smartphone.	65.8%	4594	23.5%	1638	4.5%	313	6.2%	436	6981
...take and send photos using a smartphone.	96.5%	6745	2.6%	183	0.5%	37	0.4%	27	6992
...use the device to work with e-books.	47.2%	3282	25.0%	1741	18.0%	1254	9.8%	681	6958
...conduct research on the Internet (e.g. using search engines such as Google or Bing).	96.6%	6754	3.0%	212	0.2%	14	0.1%	9	6989
...post content on social networks.	82.2%	5726	12.1%	841	4.3%	300	1.5%	102	6969
...consult multiple sources for database research (e.g. Primo for the university library).	70.2%	4904	20.7%	1442	4.4%	307	4.7%	329	6982
...differentiate between reliable and unreliable news on the Internet.	75.1%	5251	22.6%	1582	2.0%	140	0.3%	19	6992
...identify advertisements.	88.0%	6138	10.1%	701	1.3%	93	0.6%	41	6973
...carry out programming.	13.6%	947	20.6%	1437	62.1%	4329	3.7%	255	6968
...design web applications.	14.5%	1008	22.9%	1592	52.8%	3670	9.8%	679	6949
...help others with computer issues.	26.8%	1863	48.3%	3365	23.9%	1665	1.0%	68	6961
...use office applications.	80.4%	5599	15.5%	1081	3.0%	208	1.1%	75	6963
...use removable media (e.g. USB flash drive).	91.1%	6336	6.4%	444	2.3%	160	0.3%	18	6958
...create screencasts.	24.8%	1724	15.5%	1077	28.8%	2001	30.9%	2146	6948
...create podcasts.	15.5%	1078	18.1%	1259	57.0%	3962	9.4%	655	6954
...create video clips.	36.0%	2511	28.6%	1992	31.9%	2222	3.5%	242	6967
...read e-books.	71.0%	4945	16.7%	1163	9.7%	675	2.7%	185	6968

Computers and other devices can be used in various contexts and for different purposes. Please indicate whether the statements below apply to you personally.

Table A5.2: Available software

	Selected		Not selected		Overall
	%	n	%	n	n
Word processing programmes (e.g. Word, Pages, LibreOffice Writer)	96.8%	6775	3.2%	227	7002
Spreadsheet programmes (e.g. Excel, Numbers, LibreOffice Calc)	89.3%	6250	10.7%	752	7002
Presentation software (e.g. PowerPoint, Keynote, Libre Office Impress)	92.8%	6500	7.2%	502	7002
PDF readers (e.g. Adobe Acrobat, Foxit)	89.2%	6247	10.8%	755	7002
E-mail programmes (e.g. Outlook, Mail, Thunderbird)	84.8%	5940	15.2%	1062	7002
Collaboration tools (e.g. Microsoft Teams, Trello)	27.4%	1920	72.6%	5082	7002
Communication tools (e.g. Zoom, Skype, Discord, Jitsi Meet)	72.1%	5048	27.9%	1954	7002
Media players (e.g. Windows Media Player, VLC)	76.6%	5362	23.4%	1640	7002
ANSYS	1.3%	88	98.7%	6914	7002
Citavi	19.1%	1335	80.9%	5667	7002
EndNote/reference manager	8.1%	568	91.9%	6434	7002
LaTeX	9.6%	674	90.4%	6328	7002
Maple	0.6%	41	99.4%	6961	7002
Mathematica	1.7%	117	98.3%	6885	7002
Matlab/Simulink	11.6%	814	88.4%	6188	7002
MAXQDA	3.5%	247	96.5%	6755	7002
Origin Pro	2.5%	176	97.5%	6826	7002
SPSS	12.0%	837	88.0%	6165	7002
None of the above	0.5%	36	99.5%	6966	7002

What software is already installed on the devices you currently have access to? Please select all software solutions that are installed on the device from the list below even if you have not used them yet. Multiple selections are allowed.

Table A5.3: Difficulties procuring software needed for study purposes

	Selected		Not selected		Overall
	%	n	%	n	n
I do not see any issues.	35.1%	2417	64.9%	4478	6895
The software may not be compatible with the devices I have access to.	20.8%	1434	79.2%	5461	6895
Licence fees apply to this software.	43.5%	3001	56.5%	3894	6895
I do not know how to set up software (download, installation and/or configuration).	22.4%	1542	77.6%	5353	6895
The capacity of the devices I have access to may not be sufficient.	19.6%	1350	80.4%	5545	6895
Other	2.6%	176	97.4%	6719	6895

If you need additional software for study purposes: where do you see potential issues? Multiple selections are allowed.

Table A5.4: Subjective rating of software skills

	Good		Rather good		Partly good, partly poor		Rather poor		Poor		Overall
	%	n	%	n	%	n	%	n	%	n	n
Word processing programmes (e.g. Word, Pages, LibreOffice Writer)	38.7%	2620	46.9%	3172	12.3%	831	1.8%	122	0.3%	20	6765
Spreadsheet programmes (e.g. Excel, Numbers, LibreOffice Calc)	17.3%	1046	30.7%	1851	29.7%	1791	16.9%	1021	5.5%	330	6039
Presentation software (e.g. PowerPoint, Keynote, Libre Office Impress)	30.3%	1955	45.8%	2955	19.2%	1237	4.0%	259	0.7%	48	6454
PDF readers (e.g. Adobe Acrobat, Foxit)	35.8%	2217	42.9%	2657	16.9%	1047	3.8%	233	0.6%	40	6194
E-mail programmes (e.g. Outlook, Mail, Thunderbird)	51.9%	3027	38.3%	2235	8.0%	466	1.5%	89	0.3%	18	5835
Collaboration tools (e.g. Microsoft Teams, Trello)	19.8%	317	33.4%	533	28.6%	456	15.2%	243	3.0%	48	1597
Communication tools (e.g. Zoom, Skype, Discord, Jitsi Meet)	29.2%	1461	42.8%	2140	22.1%	1103	5.1%	254	0.8%	41	4999
Media players (e.g. Windows Media Player, VLC)	36.0%	1893	40.7%	2140	18.1%	951	4.6%	243	0.6%	30	5257
ANSYS	16.7%	13	24.4%	19	35.9%	28	17.9%	14	5.1%	4	78
Citavi	10.9%	133	31.2%	382	32.9%	403	18.8%	230	6.3%	77	1225
EndNote / reference manager	10.8%	51	28.8%	136	31.7%	150	20.9%	99	7.8%	37	473
LaTeX	21.8%	140	33.0%	212	27.1%	174	12.0%	77	6.1%	39	642
Maple	9.7%	3	29.0%	9	35.5%	11	22.6%	7	3.2%	1	31
Mathematica	17.3%	18	33.7%	35	27.9%	29	15.4%	16	5.8%	6	104
Matlab/Simulink	13.5%	106	28.6%	224	35.1%	275	17.6%	138	5.1%	40	783
MAXQDA	5.6%	12	33.3%	71	35.2%	75	16.9%	36	8.9%	19	213
Origin Pro	12.3%	20	31.5%	51	28.4%	46	19.8%	32	8.0%	13	162
SPSS	5.8%	46	26.4%	208	34.0%	268	23.5%	185	10.3%	81	788

How would you rate your skills using the software below at present?

(Filter: this question/each item was only asked/listed if the respective software was selected (A5.2).)

Table A5.5: Rating of knowledge of fields of application of computers and other devices differentiated by gender

		Yes		To some extent		No		I do not know this field of application.		Significance test
		%	n	%	n	%	n	%	n	
...install and/or update apps on a smartphone.	F	90.4%	3752	7.9%	330	1.3%	54	0.4%	16	Chi-Square (3) = 18.251 p = .000
	M	91.8%	2292	5.7%	143	1.6%	41	0.8%	21	
...manage the data protection settings of apps on a smartphone.	F	63.0%	2616	25.2%	1047	4.5%	187	7.2%	300	Chi-Square (3) = 54.305 p = .000
	M	71.5%	1784	19.8%	493	4.0%	101	4.7%	116	
...take and send photos using a smartphone.	F	97.3%	4043	2.1%	89	0.3%	14	0.2%	8	Chi-Square (3) = 23.716 p = .000
	M	95.3%	2383	3.3%	82	0.8%	20	0.6%	16	
...use the device to work with e-books.	F	43.4%	1794	26.1%	1076	19.9%	822	10.6%	437	Chi-Square (3) = 86.834 p = .000
	M	54.7%	1361	23.4%	582	14.2%	354	7.8%	193	
...conduct research on the Internet (e.g. using search engines such as Google or Bing).	F	97.3%	4040	2.6%	106	0.1%	4	0.0%	2	Chi-Square (3) = 13.252 p = .000
	M	96.0%	2399	3.5%	88	0.3%	7	0.2%	6	
...post content on social networks.	F	84.1%	3487	11.9%	493	3.0%	123	1.1%	45	Chi-Square (3) = 42.452 p = .000
	M	80.6%	2005	11.6%	289	5.8%	144	2.0%	50	
...consult multiple sources for database research (e.g. PriMo for the university library).	F	70.5%	2927	21.3%	886	4.2%	173	4.0%	164	Chi-Square (3) = 18.019 p = .000
	M	70.6%	1762	18.9%	471	4.6%	116	5.9%	147	
...differentiate between reliable and unreliable news on the Internet.	F	72.2%	3001	25.9%	1074	1.7%	69	0.2%	10	Chi-Square (3) = 74.190 p = .000
	M	80.8%	2019	16.8%	420	2.2%	54	0.3%	7	
...identify advertisements.	F	88.3%	3661	9.9%	412	1.1%	46	0.6%	26	Chi-Square (3) = 1.208 p = 0.751
	M	88.6%	2209	9.5%	237	1.3%	33	0.5%	13	
...carry out programming.	F	6.6%	274	16.5%	683	72.5%	3001	4.4%	183	Chi-Square (3) = 719.534 p = .000
	M	25.5%	636	27.8%	692	44.6%	1110	2.1%	53	
...design web applications.	F	11.9%	493	21.8%	901	54.4%	2248	11.8%	489	Chi-Square (3) = 129.319 p = .000
	M	19.4%	483	24.8%	616	50.0%	1242	5.8%	145	
...help others with computer issues.	F	15.4%	638	52.7%	2179	30.8%	1274	1.1%	44	Chi-Square (3) = 823.356 p = .000
	M	46.1%	1149	41.4%	1031	11.8%	294	0.7%	18	
...use office applications.	F	77.7%	3214	17.5%	724	3.4%	140	1.4%	60	Chi-Square (3) = 68.818 p = .000
	M	85.7%	2133	11.8%	294	2.1%	52	0.4%	11	
...use removable Media (e.g. USB flash drive).	F	90.4%	3738	6.7%	277	2.6%	109	0.3%	11	Chi-Square (3) = 13.888 p = 0.003
	M	92.9%	2312	5.3%	133	1.6%	39	0.2%	5	
...create screencasts.	F	19.8%	817	13.3%	550	31.3%	1293	35.5%	1467	Chi-Square (3) = 266.814 p = .000
	M	33.9%	842	19.2%	478	24.0%	596	22.9%	570	
...create podcasts.	F	10.4%	428	16.2%	669	63.1%	2609	10.4%	428	Chi-Square (3) = 311.660 p = .000
	M	24.4%	607	21.6%	538	46.2%	1149	7.7%	191	
...create video clips.	F	30.4%	1259	29.6%	1226	35.7%	1476	4.2%	175	Chi-Square (3) = 203.137 p = .000
	M	46.8%	1166	27.0%	673	24.0%	599	2.2%	55	
...read e-books.	F	69.2%	2865	17.1%	707	10.9%	450	2.8%	117	Chi-Square (3) = 37.823 p = .000
	M	75.9%	1891	14.6%	363	7.4%	184	2.2%	55	

Table A5.6: Subjective rating of software skills differentiated by gender

		Good		Partly good, partly poor		Poor		Significance test
		%	n	%	n	%	n	
Word processing prograMMes (e.g. Word, Pages, LibreOffice Writer)	F	85.4%	3450	12.4%	500	2.2%	90	Chi-Square (2) = 2.082 p = .353
	M	86.5%	2080	11.8%	283	1.8%	43	
Spreadsheet prograMMes (e.g. Excel, Numbers, LibreOffice Calc)	F	40.1%	1401	32.0%	1118	27.9%	976	Chi-Square (2) = 266.421 p = .000
	M	60.5%	1368	26.2%	593	13.3%	301	
Presentation software (e.g. PowerPoint, Keynote, Libre Office Impress)	F	76.2%	2945	18.8%	728	5.0%	194	Chi-Square (2) = 1.276 p = .582
	M	76.3%	1746	19.3%	442	4.4%	101	
PDF readers (e.g. Adobe Acrobat, Foxit)	F	76.8%	2747	18.3%	655	4.9%	176	Chi-Square (2) = 25.286 p = .000
	M	82.1%	1903	14.5%	337	3.3%	77	
E-Mail programmes (e.g. Outlook, Mail, Thunderbird)	F	91.2%	3195	7.2%	254	1.6%	55	Chi-Square (2) = 6.457 p = .040
	M	89.2%	1840	8.6%	178	2.2%	45	
Collaboration tools (e.g. Microsoft Teams, Trello)	F	48.5%	399	31.6%	260	19.9%	164	Chi-Square (2) = 17.452 p = .000
	M	59.1%	429	25.1%	182	15.8%	115	
Communication tools (e.g. Zoom, Skype, Discord, Jitsi Meet)	F	68.0%	1986	25.0%	731	6.9%	202	Chi-Square (2) = 70.580 p = .000
	M	79.0%	1484	17.1%	322	3.8%	72	
Media players (e.g. Windows Media Player, VLC)	F	71.5%	2076	21.6%	626	6.9%	200	Chi-Square (2) = 113.189 p = .000
	M	84.0%	1786	13.3%	282	2.7%	58	
ANSYS	F	31.3%	5	37.5%	6	31.3%	5	Chi-Square (2) = 0.839 p = .657
	M	41.7%	25	36.7%	22	21.7%	13	
Citavi	F	42.9%	296	31.0%	214	26.1%	180	Chi-Square (2) = 3.279 p = .194
	M	40.7%	197	36.0%	174	23.3%	113	
EndNote/reference manager	F	39.2%	105	31.0%	83	29.9%	80	Chi-Square (2) = 0.924 p = .630
	M	42.9%	79	31.0%	57	26.1%	48	
LaTeX	F	50.0%	110	25.0%	55	25.0%	55	Chi-Square (2) = 9.374 p = .009
	M	56.7%	220	28.4%	110	14.9%	58	
Maple*	F							Chi-Square (2) = 2.182 p = .336
	M							
Mathematica	F	43.5%	10	30.4%	7	26.1%	6	Chi-Square (2) = 0.707 p = .702
	M	52.8%	38	27.8%	20	19.4%	14	
Matlab/Simulink	F	35.3%	72	38.2%	78	26.5%	54	Chi-Square (2) = 5.286 p = .071
	M	44.4%	247	34.0%	189	21.6%	120	
MAXQDA	F	40.6%	52	32.8%	42	26.6%	34	Chi-Square (2) = 1.434 p = .488
	M	32.4%	23	39.4%	28	28.2%	20	
Origin Pro	F	47.0%	31	19.7%	13	33.3%	22	Chi-Square (2) = 3.924 p = .141
	M	41.6%	37	33.7%	30	24.7%	22	
SPSS	F	32.5%	164	32.5%	164	35.0%	177	Chi-Square (2) = 2.419 p = .298
	M	31.3%	80	37.9%	97	30.9%	79	

(Filter: this question/each item was only asked/listed if the respective software was selected (A5.2).)

*Not shown due to the low number of selections.

Table A6.1: Opportunieties and risks

	Yes		No		I do not know		Overall
	%	n	%	n	%	n	n
Risks	49.2%	3399	29.0%	2005	21.8%	1506	6910
Opportunities	54.7%	3764	17.6%	1210	27.8%	1912	6886

Do you see any opportunities/risks if classes are exclusively held online?

Survey

Survey contents	Comments
Language selection **Für Ihre Teilnahmebereitschaft danken wir Ihnen herzlich!** **We would like to thank you very much for your willingness to participate!** **Bitte wählen Sie, in welcher Sprache sie den Fragebogen ausfüllen möchten:** **Please select the language in which you would like to complete the survey:** ○ Deutsch / German ○ Englisch / English	
Survey start screen Online or rather not? The first days of remote studying have passed. How do you manage to participate in the courses currently offered? Where do you encounter technological and/or organisational issues? Where do you see room for improvement? Information on the process: You have the option to abandon your completion of the questionnaire at any time or not to answer it at all without any negative consequences. You can pause the completion of the questionnaire and continue at a later time. For questions with free-text fields, please provide information in such a way that your statements do not allow any inferences about individuals. Information on data protection: The University of Duisburg-Essen conducts this survey in accordance with its legal duty to ensure quality by means of accreditation and evaluation (Section 7 of the Higher Education Act (HG NRW)) in combination with Article 6 (1) Sentence 1 Item e of the GDPR and in accordance with the 'Regulation on procedures for quality management and quality assurance in the field of studying and teaching and for evaluation purposes' (QM-Ordnung)). UDE's Centre for Quality Enhancement and Teaching Development (ZHQE), Keetmanstr. 3-9, 47058 Duisburg; email: zhqe@uni-due.de; phone: 0203-379-7006, acts as the controller for the processing of data. Dr Kai-Uwe Loser, Forsthausweg 2, 47057 Duisburg; email: kai-uwe.loser@uni-due.de; phone: 0234-32-28720, acts as the Data Protection Officer for the ZHQE in his function as official Data Protection Officer of UDE. For more detailed information on data protection, please follow this link (only available in German): Information on data protection. If you have any questions, please contact: **Universität Duisburg-Essen** **Karl-Heinz Stammen** **Centre for Quality Enhancement and Teaching Development (ZHQE)** **Keetmanstr. 3-9** **47058 Duisburg** **E-Mail:** ude-umfrage@uni-due.de ○ I have read the data protection information and give my consent.	

Teaching and learning tools

The first part of the survey concerns the experience you have gathered so far with digital forms of teaching and learning.

Which of the applications and/or teaching and learning tools listed below have you used in the context of classes before or which have been used in classes you attended – irrespective of the semester?

Please check the items. Multiple selections are allowed.

- ☐ Asynchronous collaboration/collaboration platforms on the Internet using Sciebo or BSCW
- ☐ Other asynchronous collaboration/collaboration platforms on the Internet using Mattermost, Slack, Trello, Evernote or Microsoft Teams, for example
- ☐ Audi and video conferences or online meetings using Adobe Connect, BigBlueButton (BBB), Jitsi Meet or Zoom
- ☐ Other audio and video conferences or online meetings using Skype, Discord or Mumble, for example
- ☐ Interactive Slides E-Books (ISEB)
- ☐ JACK e-assessments
- ☐ LPLUS e-assessments
- ☐ Social media (e.g. Facebook, Jodel)
- ☐ Online reserve collections
- ☐ Lecture hall polls/live voting using PINGO
- ☐ Other lecture hall polls/live voting using Mentimeter or Tweedback, for example
- ☐ Filesharing (e.g. Nextcloud, DropBox, GoogleDrive etc.)
- ☐ Teaching videos on Opencast, DuEPublico or via Moodle
- ☐ Teaching videos on other platforms such as YouTube or Twitch
- ☐ Moodle learning platform
- ☐ Other learning platforms such as ILIAS
- ☐ Messenger (Jabber, Rocket.Chat)
- ☐ Other messengers (e.g. WhatsApp, Signal, Telegram, Threema)
- ☐ Mahara e-portfolio system
- ☐ MOOCs (e.g. Coursera, OpenCourseWorld)
- ☐ Online forums (apart from Moodle or ILIAS)
- ☐ Professional networks (e.g. LinkedIn, Xing)
- ☐ Others, namely: _____
- ☐ None of the above

Available devices

With the following questions, we would like to find out which electronic media you will be using in the summer semester 2020 and how. The findings from your answers will serve to help us understand your skills, habits and expectations in order to adapt to them the options for studying we offer.

Which of the devices listed below do you own or which can you use for your studies in the summer semester 2020?

	Yes, and I am the only one who uses this device.	Yes, but I have to share this device with others or borrow it.	No, I do not have access to such a device.
Desktop computer (e.g. PC, Mac)	○	○	○
Notebook/laptop/convertible laptop (e.g. MacBook Air, Microsoft Surface, Lenovo Yoga)	○	○	○
Tablet PC (e.g. iPad, Samsung Galaxy Tab)	○	○	○
Webcam (also integrated)	○	○	○
Microphone (also integrated)	○	○	○
Earphones or headset	○	○	○
Smartphone (e.g. iPhone, Samsung Galaxy)	○	○	○
E-Book reader (e.g. Kindle, tolino)	○	○	○
Scanner	○	○	○
Printer	○	○	○

Performance of available devices

Filter: if the respective device is available

How would you rate the performance of the devices that you have access to?

	I assume the device will largely fulfil the technical requirements.	I assume that there will be issues using this device (e.g. due to the age of the device or as a result of damage).	I could not tell at this point.
Desktop computer (e.g. PC, Mac)	○	○	○
Notebook/laptop/convertible laptop (e.g. MacBook Air, Microsoft Surface, Lenovo Yoga)	○	○	○
Tablet PC (e.g. iPad, Samsung Galaxy Tab)	○	○	○
Webcam (also integrated)	○	○	○
Microphone (also integrated)	○	○	○
Earphones or headset	○	○	○
Smartphone (e.g. iPhone, Samsung Galaxy)	○	○	○
E-Book reader (e.g. Kindle, tolino)	○	○	○
Scanner	○	○	○
Printer	○	○	○

Use of available devices

Which of the devices you selected above will you likely use primarily for study-related activities and learning during the summer semester 2020?

Please check the items. Multiple selections are allowed.

☐ Desktop computer (e.g. PC, Mac)
☐ Notebook/laptop/convertible laptop (e.g. MacBook Air, Microsoft Surface, Lenovo Yoga)
☐ Tablet PC (e.g. iPad, Samsung Galaxy Tab)
☐ Webcam (also integrated)
☐ Microphone (also integrated)
☐ Earphones or headset
☐ Smartphone (e.g. iPhone, Samsung Galaxy)
☐ E-Book reader (e.g. Kindle, tolino)
☐ Scanner
☐ Printer

Filter: if the respective device is available

Desktop computers

Please specify the operating system of your desktop computer.

○ Microsoft Windows
○ Apple macOS
○ Linux or other
○ I do not know.

Filter: if a desktop computer (e.g. PC, Mac) is the device primarily used

---

Notebooks/laptops/convertible laptops

Please specify the operating system of your notebook/laptop/convertible laptop.

○ Microsoft Windows
○ Apple macOS
○ Linux or other
○ I do not know

Filter: if a notebook/laptop/convertible laptop (e.g. MacBook Air, Microsoft Surface, Lenovo Yoga) is the device primarily used

---

Do you use an (additional) external monitor when you work with a notebook/laptop/convertible laptop?

○ Yes
○ No

Filter: if a notebook/laptop/convertible laptop (e.g. MacBook Air, Microsoft Surface, Lenovo Yoga) is the device primarily used

---

Please specify the screen size (diagonal) of your notebook/laptop/convertible laptop.

If you do not know the size in inches, please measure or estimate the screen diagonal in centimetres (cm).

○ Up to 12 inches/up to 30.5 cm
○ Between 13 and 17 inches/between 30.6 cm and 43.2 cm
○ 18 inches/43.3 cm or more
○ I do not know.

Filter: if a notebook/laptop/convertible laptop (e.g. MacBook Air, Microsoft Surface, Lenovo Yoga) is the device primarily used

Tablet PCs

Please specify the operating system of your tablet PC.

Filter: if a tablet PC (e.g. iPad, Samsung Galaxy Tab) is the device primarily used

- ○ Microsoft Windows
- ○ Apple iOS
- ○ Android
- ○ FireOS
- ○ Linux or other
- ○ I do not know.

Please specify the screen size (diagonal) of your tablet.

If you do not know the size in inches, please measure or estimate the screen diagonal in centimetres (cm).

Filter: if a tablet PC (e.g. iPad, Samsung Galaxy Tab) is the device primarily used

- ○ Up to 7 inches/up to 17.8 cm
- ○ Between 8 and 9 inches/between 20.3 cm and 22.9 cm
- ○ Between 10 and 11 inches/ between 25.4 and 27.9 cm
- ○ 12 inches/30.5 cm or more
- ○ I do not know.

Smartphone

Please specify the operating system of your smartphone.

Filter: if a smartphone (e.g. iPhone, Samsung Galaxy) is the device primarily used

- ○ Apple iOS
- ○ Android
- ○ Other
- ○ I do not know.

Assessment of hardware situation

Considering all media technology devices (hardware) that are currently available to you, to what extent do you agree with the statement below?

I assume that I will be able to fulfil all study-related tasks I am required to complete, both online and offline, in the summer semester 2020 using the media technology devices (hardware) that I have access to.

Agree	Rather agree	Partly agree, partly disagree	Rather disagree	Disagree
○	○	○	○	○

Hardware: what is lacking in particular?

Please give reasons for your response. What do you lack in particular?

_____

Announcement of hybrid semester

How did you prepare for the start of the online semester?

	Yes	No
I have purchased one or more media technology devices for this semester because I did not have them.	○	○
I have purchased one or more media technology devices for this semester because the quality of the devices I had access to was inadequate.	○	○
I am planning to purchase one or more devices for this semester.	○	○
I would need to purchase one or more devices but cannot afford them.	○	○
I have all the devices I need for the online semester.	○	○

Unavailable services

How would you assess the statements below for you personally?

If UDE does not provide any ...

	Unproblematic	Rather unproblem-atic	Partly prob-lematic, partly unproblematic	Rather problematic	Problematic
Scanning opportunities, to me, this is ...	○	○	○	○	○
Copying opportunities, to me, this is ...	○	○	○	○	○
Printing opportunities, to me, this is ...	○	○	○	○	○

Internet access

The questions below concern the opportunities you have to access the Internet.

Which options to access the Internet are available to you for completing study-related tasks and learning?

Please check the items. Multiple selections are allowed.

☐ Permanent landline connection from a telecommunications service provider (e.g. DSL, cable, fibre optic cable) (irrespective of whether you access via cable or WLAN)

☐ LAN connection in student residences or another non-mobile, permanent connection (irrespective of whether you access via cable or WLAN)

☐ Mobile data connection via a smartphone or an Internet stick

☐ Permanent connection via the mobile network (e.g. Telekom Speedbox, Vodafone Gigacube)

☐ WLAN connections provided by a third party for which you have no influence on availability (e.g. university WLAN, Freifunk)

Bandwidth

Please specify the bandwidth (speed) that is usually available to you for downloading or uploading files.

This information can be found in the relevant contract and in the router settings. Alternatively, you can also measure the bandwidth that is currently available on this website: https://www.speedmeter.de

Download

- ○ Lower than DSL-16 (download at less than 16 Mbit/s)
- ○ DSL-16 (download between 16 and under 50 Mbit/s)
- ○ DSL-50 (download between 50 and under 100 Mbit/s)
- ○ DSL-100 (download at 100 Mbit/s or more)
- ○ I do not know.

Upload

- ○ Lower than 1 Mbit/s
- ○ Between 1 and under 4 Mbit/s
- ○ Between 4 and under 6 Mbit/s
- ○ 6 Mbit/s or higher
- ○ I do not know.

Filter: only asked if 'permanent landline connection from a telecommunications service provider (e.g. DSL, cable, fibre optic cable) (irrespective of whether you access via cable or WLAN)' and/or 'LAN connection in student residences or another non-mobile, permanent connection (irrespective of whether you access via cable or WLAN)' were selected

Capacity issues

How frequently do situations occur where your Internet access capacity is curbed, preventing you from performing study-related activities, e.g. because you share the connection with others (e.g. family, student residence, housemates) or due to downtimes caused by the provider?

- ○ Never
- ○ Once per week at most
- ○ Multiple times per week
- ○ Once per day
- ○ Multiple times per day

Mobile phone plan quality

To what extent do you agree with the following statement regarding the quality of your mobile phone plan?

I believe that the quality of my **mobile phone plan** (network coverage and/or speed of data connection) is sufficient for completing study-related activities online.

Agree	Rather agree	Partly agree, partly disagree	Rather disagree	Disagree	I do not know/ cannot tell yet
○	○	○	○	○	○

Filter: only asked if 'mobile data connection via a smartphone or an Internet stick' and/or 'permanent connection via the mobile network (e.g. Telekom Speedbox, Vodafone Gigacube)' were selected

Audio or video conferences

This semester, many classes will – at least in part – be held in the form of live streams and/or in the form of audio/video conferences.

To what extent do you agree with the statements below?

	Agree	Rather agree	Partly agree, partly disagree	Rather disagree	Disagree	I do not know/ cannot tell yet
I assume that I will be able to participate in web-based audio/video conferences (e.g. Jitsi, BigBlueButton, Zoom) **using the media technology equipment I have access to** (hardware and software).	○	○	○	○	○	○
I assume that the **bandwidth** (speed) **available to me** and my **data allowance** are sufficient for carrying out study-related activities (e.g. video/ audio streaming, downloading material, participating in video/audio conferences).	○	○	○	○	○	○

Technical impediments

Filter: only asked if 'partly agree, partly disagree', 'rather disagree' or 'disagree' was selected in the audio and video conferences section

Please give reasons for your response. What impediments are there that keep you from completing study-related activities online from a technical perspective?

Please check the items. Multiple selections are allowed.

☐ The bandwidth/speed of the Internet connection available to me is insufficient, e.g. due to bandwidth/ speed restrictions.

☐ The data allowance of the Internet connection available to me is insufficient, e.g. due to data allowance restrictions.

☐ Others, namely: _____

☐ The media technology equipment available to me would have to be complemented/extended, namely with: _____

☐ I do not know.

VDI

An option is available to access virtual desktops provided by UDE from any device via the Internet. Virtual desktops are centrally managed, equipped with common software, with the option of adding further applications. In addition, these desktops are highly performant regardless of the device from which you access them.

Are you aware that UDE provides virtual desktops and do you use one?

○ Yes, I am aware of this service and use it.

○ Yes, I am aware of this service, but I do not use it yet.

○ No, I am not aware of this service.

Software

Now, think of the devices that you currently have access to once more.
What software is already installed on the devices you currently have access to? Please select all software solutions that are installed on the device from the list below even if you have not used them yet.

Please check the items. Multiple selections are allowed

- ☐ Word processing programmes (e.g. Word, Pages, LibreOffice Writer)
- ☐ Spreadsheet programmes (e.g. Excel, Numbers, LibreOffice Calc)
- ☐ Presentation software (e.g. PowerPoint, Keynote, Libre Office Impress)
- ☐ PDF readers (e.g. Adobe Acrobat, Foxit)
- ☐ E-mail programmes (e.g. Outlook, Mail, Thunderbird)
- ☐ Media players (e.g. Windows Media Player, VLC)
- ☐ ANSYS
- ☐ Citavi
- ☐ EndNote/reference manager
- ☐ Collaboration tools (e.g. Microsoft Teams, Trello)
- ☐ Communication tools (e.g. Zoom, Skype, Discord, Jitsi Meet)
- ☐ LaTeX
- ☐ Maple
- ☐ Mathematica
- ☐ Matlab/Simulink
- ☐ MAXQDA
- ☐ Origin Pro
- ☐ SPSS
- ☐ None of the above

Software skills rating

Filter: only asked if the respective software is available

How would you rate your skills using the software below at present?

	Good	Rather good	Partly agree, partly disagree	Rather poor	Poor	I have not used it yet.
Word processing programmes (e.g. Word, Pages, LibreOffice Writer)	○	○	○	○	○	○
Spreadsheet programmes (e.g. Excel, Numbers, LibreOffice Calc)	○	○	○	○	○	○
Presentation software (e.g. PowerPoint, Keynote, Libre Office Impress)	○	○	○	○	○	○
PDF readers (e.g. Adobe Acrobat, Foxit)	○	○	○	○	○	○
E-mail programmes (e.g. Outlook, Mail, Thunderbird)	○	○	○	○	○	○
Media players (e.g. Windows Media Player, VLC)	○	○	○	○	○	○
ANSYS	○	○	○	○	○	○
Citavi	○	○	○	○	○	○
EndNote/reference manager	○	○	○	○	○	○
Collaboration tools (e.g. Microsoft Teams, Trello)	○	○	○	○	○	○
Communication tools (e.g. Zoom, Skype, Discord, Jitsi Meet)	○	○	○	○	○	○
LaTeX	○	○	○	○	○	○
Maple	○	○	○	○	○	○
Mathematica	○	○	○	○	○	○
Matlab/Simulink	○	○	○	○	○	○
MAXQDA	○	○	○	○	○	○
Origin Pro	○	○	○	○	○	○
SPSS	○	○	○	○	○	○

Difficulties with software and licences

If you need additional software for study purposes: where do you see potential issues?

Please check the items. Multiple selections are allowed.

☐ I do not see any issues.
☐ The software may not be compatible with the devices I have access to.
☐ Licence fees apply to this software.
☐ I do not know how to set up software (download, installation and/or configuration).
☐ The capacity of the devices I have access to may not be sufficient.
☐ Others, namely: _____

Are you aware that UDE provides software via campus and state licence agreements and do you make use of those?

○ Yes, I am aware of this service and use it.
○ Yes, I am aware of this service, but I do not use it yet
○ No, I am not aware of this service.

VPN

In order to access certain online resources (e.g. e-books, electronic journals or databases), you need to authenticate as a member of UDE. Such authentication could, for example, be performed by using a Virtual Private Network (VPN).

Are you aware that UDE provides a VPN service, which you can use via Cisco AnyConnect or OpenConnect, for example, and do you use it?

○ Yes, I am aware of this service and use it.
○ Yes, I am aware of this service, but I do not use it yet.
○ No, I am not aware of this service.

Experience with digital applications

Computers and other devices can be used in various contexts and for different purposes. Please indicate whether the statements below apply to you personally.

	Yes	To some extent	No	I do not know this field of application
Smartphone: I am able to ...				
…install and/or update apps on a smartphone.	○	○	○	○
…manage the data protection settings of apps on a smartphone.	○	○	○	○
…take and send photos using a smartphone.	○	○	○	○
…use the device to work with e-books.	○	○	○	○
Internet: I am able to ...				
...conduct research on the Internet (e.g. using search engines such as Google or Bing).	○	○	○	○
…post content on social networks.	○	○	○	○
…consult multiple sources for database research (e.g. Primo for the university library).	○	○	○	○
…differentiate between reliable and unreliable news on the Internet.	○	○	○	○
…identify advertisements.	○	○	○	○
Desktop PC/notebook/laptop/convertible laptop: I am able to …				
…carry out programming.	○	○	○	○
…design web applications.	○	○	○	○
…help others with computer issues.	○	○	○	○
…use office applications.	○	○	○	○
…use removable media (e.g. USB flash drive).	○	○	○	○
…create screencasts.	○	○	○	○
…create podcasts.	○	○	○	○
…create video clips.	○	○	○	○
…read e-books.	○	○	○	○

Study situation

In order to better understand the findings from this survey and derive suitable measures, we need some information on the participants of this survey and their study situation. We would like to assure you once more that data will only be analysed and reported in such a way that it will not allow any inferences about individuals.

What degree do you pursue in your current programme at the University of Duisburg-Essen?

- ○ Bachelor
- ○ Master
- ○ State examination in medicine
- ○ Other

Which bachelor's degree is this?

Filter: only if the degree type 'Bachelor' was selected

- ○ Single-subject Bachelor of Arts
- ○ Dual-subject Bachelor of Arts
- ○ Bachelor of Science
- ○ Bachelor with a teaching option for primary schools (G)
- ○ Bachelor with a teaching option for secondary schools (HRSGe)
- ○ Bachelor with a teaching option for secondary schools offering university entrance qualification (GyGe)
- ○ Bachelor with a teaching option for vocational schools (BK)

Please specify your degree programme:

Filter: only if the degree type 'Single-subject Bachelor of Arts' is selected

Humanities

- ○ English Cultural Studies and Business Administration
- ○ French Cultural Studies and Business Administration
- ○ Dutch Cultural Studies and Business Administration
- ○ Spanish Cultural Studies and Business Administration
- ○ Turkish Cultural Studies and Business Administration

Social Sciences

- ○ Global and Transnational Sociology
- ○ Modern East Asian Studies
- ○ Political Science
- ○ Sociology

Educational Sciences

- ○ Educational Science
- ○ Social Work

Other

- ○ Namely: _____

Please specify the <u>two</u> subjects you study:

Filter: only if the degree type 'Dual-subject Bachelor of Arts' is selected

Humanities

- ☐ Applied Philosophy
- ☐ Anglophone Studies
- ☐ Christian Studies (Protestantism)
- ☐ Christian Studies (Catholicism)
- ☐ French Language and Culture
- ☐ German Language and Culture Studies and Communication
- ☐ History
- ☐ Communication Science
- ☐ Science of Art
- ☐ Musicology (Folkwang University of the Arts)
- ☐ Language and Culture of the Netherlands
- ☐ Spanish Language and Culture
- ☐ Turkish Studies

Are you officially enrolled for a part-time programme?

Filter: only if the degree type 'Dual-subject Bachelor of Arts' is selected

- ○ Yes
- ○ No

Please specify your degree programme:

Filter: only if the degree type 'Bachelor of Science' is selected

Educational Sciences
- ○ Psychology

Economics and Business Administration (Essen)
- ○ Applied Computer Science – Systems Engineering
- ○ Business Administration (Essen)
- ○ Economics
- ○ Business Information Systems

Mercator School of Management – Business Administration (Duisburg)
- ○ Business Administration (Duisburg)
- ○ Economic Education

Mathematics
- ○ Mathematics
- ○ Technical Mathematics
- ○ Economathematics

Physics
- ○ Energy Science
- ○ Physics (part-time)
- ○ Physics

Chemistry
- ○ Chemistry
- ○ Water Sciences: Chemistry, Analytics, Microbiology

Biology
- ○ Aquatic Biology
- ○ Biology (part-time)
- ○ Biology
- ○ Medical Biologie
- ○ Molecular Biologie

Engineering
- ○ Applied Computer Science with specialisation in Computer Engineering or Media Information Technology
- ○ Applied Cognitive and Media Science
- ○ Civil Engineering (part-time)
- ○ Civil Engineering
- ○ Computer Engineering (ISE)
- ○ Electrical and Electronic Engineering (ISE)
- ○ Electro-technology and Information Technology (part-time)
- ○ Electro-technology and Information Technology
- ○ Mechanical Engineering
- ○ Mechanical Engineering (ISE)
- ○ Medical Engineering
- ○ Metallurgy and Metal Forming
- ○ Metallurgy and Metal Forming (dual)
- ○ Nano Engineering (part-time)
- ○ Nano Engineering
- ○ Structural Engineering
- ○ Industrial Engineering

Other
- ○ Namely: _____

Please specify the subject that will be included in your final mark in addition to your mandatory subjects:

Filter: only if the degree type 'Bachelor with a teaching option for primary schools (G)' is selected

- ☐ Subject Group III, Natural and Social Sciences (primary level)
- ☐ English
- ☐ Art
- ☐ Music
- ☐ Protestant Religious Studies
- ☐ Catholic Religious Studies
- ☐ P.E.

Please specify the <u>two</u> subjects that will be included in your final mark:

Filter: only if the degree type 'Bachelor with a teaching option for secondary schools (HRSGe)' is selected

- ☐ Biology
- ☐ Chemistry
- ☐ German
- ☐ English
- ☐ History
- ☐ Art
- ☐ Mathematics
- ☐ Music
- ☐ Practical Philosophy
- ☐ Physics
- ☐ Protestant Religious Studies
- ☐ Catholic Religious Studies
- ☐ Social Sciences
- ☐ P.E.
- ☐ Technology
- ☐ Turkish

Please specify the <u>two</u> subjects that will be included in your final mark:

Filter: only if the degree type 'Bachelor with a teaching option for secondary schools offering university entrance qualification (GyGe)' is selected

- ☐ Biology
- ☐ Chemistry
- ☐ German
- ☐ English
- ☐ French
- ☐ History
- ☐ I.T.
- ☐ Art (1 course)
- ☐ Art
- ☐ Mathematics
- ☐ Music
- ☐ Philosophy/Practical Philosophy
- ☐ Physics
- ☐ Protestant Religious Studies
- ☐ Catholic Religious Studies
- ☐ Social Sciences
- ☐ Spanish
- ☐ P.E.
- ☐ Technology
- ☐ Turkish

Please specify the <u>two</u> subjects that will be included in your final mark:

Filter: only if the degree type 'Bachelor with a teaching option for vocational schools (BK)' is selected

- ☐ Construction Technology (major vocational field of study)
- ☐ Biology
- ☐ Biotechnology
- ☐ Chemistry
- ☐ German
- ☐ English
- ☐ Finance and Accounting (minor vocational field of study)
- ☐ French
- ☐ Art
- ☐ Mathematics
- ☐ Physics
- ☐ Production, Logistics, Marketing (minor vocational field of study)
- ☐ Protestant Religious Studies
- ☐ Catholic Religious Studies
- ☐ Sectoral Management (minor vocational field of study)
- ☐ Spanish
- ☐ P.E.
- ☐ Underground Engineering (minor vocational field of study)
- ☐ Business Information Systems (minor vocational field of study)
- ☐ Business Education (major vocational field of study)
- ☐ Business Education (equally weighted vocational field of study)

Which master's degree is this?

Filter: only if the degree type 'Master' is selected

- ○ Single-subject Master of Arts
- ○ Dual-subject Master of Arts
- ○ Master of Science
- ○ Master with a teaching option for primary schools (G)
- ○ Master with a teaching option for secondary schools (HRSGe)
- ○ Master with a teaching option for secondary schools offering university qualification (GyGE)
- ○ Master with a teaching option for vocational schools (BK)

Please specify your degree programme:

Filter: only if the degree type 'Single-subject Master of Arts' is selected

Humanities

- ○ English Cultural Studies and Business Administration
- ○ French Cultural Studies and Business Administration
- ○ Dutch Cultural Studies and Business Administration
- ○ Spanish Cultural Studies and Business Administration
- ○ Turkish Cultural Studies and Business Administration
- ○ Science of Art and Design
- ○ Science of Art and Transculturality
- ○ Urban Culture, Society and Space

Social Sciences

- ○ Contemporary East Asian Studies
- ○ Development and Governance
- ○ International Relations and Development Policy
- ○ Modern East Asian Studies
- ○ Political Management, Public Policy and Public Administration
- ○ Sociology
- ○ Socio-Economics
- ○ Survey Methodology
- ○ Theory and Comparison of Changing Political Systems

Educational Sciences

- ○ Educational Leadership - Educational Management & Innovation
- ○ Educational Media
- ○ Adult and Further Education
- ○ Social Work

Mercator School of Management

- ○ Innopreneurship

Economics and Business Administration

- ○ Medical Management

Other

- ○ Namely: _____

Please specify the <u>two</u> subjects you study:

Filter: Only if the degree type 'Dual-subject Master of Arts' is selected

Humanities

- ☐ Applied Philosophy
- ☐ Anglophone Studies
- ☐ Christian Studies (Protestantism)
- ☐ Christian Studies (Catholicism)
- ☐ German as a Foreign Language
- ☐ French Language and Culture
- ☐ German Language and Culture Studies
- ☐ History
- ☐ Intercultural history in practice
- ☐ Communication Science
- ☐ Science of Art
- ☐ Literature and Practical Media Studies
- ☐ Language and Culture of the Netherlands
- ☐ Spanish Language and Culture
- ☐ Turkish Studies

Other

- ☐ Namely: _____

Are you officially enrolled for a part-time programme?

- ○ Yes
- ○ No

Please specify your degree programme:

Filter: only if the degree type 'Master of Science' is selected

Educational Sciences
- ○ Psychology

Economics and Business Administration (Essen)
- ○ Applied Computer Science – Systems Engineering
- ○ Business Administration (Essen)
- ○ Business Administration - Energy and Finance
- ○ Digital Business Innovation and Transformation
- ○ Econometrics
- ○ Health Economics
- ○ Markets and Firms
- ○ Software and Network Engineering
- ○ Economics
- ○ Business Information Systems

Mercator School of Management – Business Administration (Duisburg)
- ○ Business Administration (Duisburg)
- ○ Business Administration – Technical Subjects
- ○ Economic Education

Mathematics
- ○ Mathematics
- ○ Technical Mathematics
- ○ Economathematics

Physics
- ○ Energy Science
- ○ Physics

Chemistry
- ○ Chemistry
- ○ Water Sciences: Chemistry, Analytics, Microbiology

Biology
- ○ Biology
- ○ Biodiversity
- ○ Medical Biology
- ○ Environmental Toxicology
- ○ Transnational Ecosystem-Based Water Management

Engineering
- ○ Applied Computer Science with specialisation in Computer Engineering or Media Information Technology
- ○ Applied Cognitive and Media Science
- ○ Automation and Control Engineering
- ○ Automotive Engineering & Management
- ○ Civil Engineering (part-time)
- ○ Civil Engineering
- ○ Communications Engineering
- ○ Computational Mechanics
- ○ Computer Engineering (ISE)
- ○ Electro-technology and Information Technology (part-time)
- ○ Electro-technology and Information Technology
- ○ Embedded Systems Engineering
- ○ Management and Technology of Water and Wastewater
- ○ Mechanical Engineering
- ○ Mechanical Engineering (ISE)
- ○ Medical Engineering
- ○ Metallurgy and Metal Forming
- ○ Nano Engineering
- ○ Power Engineering
- ○ Sustainable Urban Development
- ○ Technical Logistics
- ○ Industrial Engineering

Other
- ○ Namely: _____

Please specify the subject that will be included in your final mark in addition to your mandatory subjects:

Filter: only if the degree type 'Master with a teaching option for primary schools (G)' is selected

- ○ Subject Group III, Natural and Social Sciences (primary level)
- ○ English
- ○ Art
- ○ Music
- ○ Protestant Religious Studies
- ○ Catholic Religious Studies
- ○ P.E.

Please specify the <u>two</u> subjects that will be included in your final mark:

Filter: only if the degree type 'Master with a teaching option for secondary schools (HRSGe)' is selected

- ○ Biology
- ○ Chemistry
- ○ German
- ○ English
- ○ History
- ○ Art
- ○ Mathematics
- ○ Music
- ○ Practical Philosophy
- ○ Physics
- ○ Protestant Religious Studies
- ○ Catholic Religious Studies
- ○ Social Sciences
- ○ P.E.
- ○ Technology
- ○ Turkish

Please specify the <u>two</u> subjects that will be included in your final mark:

Filter: only if the degree type 'Master with a teaching option for secondary schools offering university qualification (GyGe)' is selected

- ☐ Biology
- ☐ Chemistry
- ☐ German
- ☐ English
- ☐ French
- ☐ History
- ☐ I.T.
- ☐ Art (1 course)
- ☐ Art
- ☐ Mathematics
- ☐ Music
- ☐ Philosophy/Practical Philosophy
- ☐ Physics
- ☐ Protestant Religious Studies
- ☐ Catholic Religious Studies
- ☐ Social Sciences
- ☐ Spanish
- ☐ P.E.
- ☐ Technology
- ☐ Turkish

Please specify the <u>two</u> subjects that will be included in your final mark:

Filter: only if the degree type 'Master with a teaching option for vocational schools (BK)' is selected

- ☐ Construction Technology (major vocational field of study)
- ☐ Biologie
- ☐ Biotechnology
- ☐ Chemistry
- ☐ German
- ☐ English
- ☐ Finance and Accounting (minor vocational field of study)
- ☐ French
- ☐ Art
- ☐ Mathematics
- ☐ Physics
- ☐ Production, Logistics, Marketing (minor vocational field of study)
- ☐ Protestant Religious Studies
- ☐ Catholic Religious Studies
- ☐ Sectoral Management (minor vocational field of study)
- ☐ Spanish
- ☐ P.E.
- ☐ Civil Engineering (minor vocational field of study))
- ☐ Business Information Systems (minor vocational field of study)
- ☐ Business Education (major vocational field of study)
- ☐ Business Education (equally weighted vocational field of study)

Gender

Please specify your gender.

- ○ Female
- ○ Male
- ○ Divers
- ○ I do not wish to be categorised.
- ○ No information provided

Semester

Which subject-related semester will you study in in the summer semester 2020?

- ○ 1-2
- ○ 3-4
- ○ 5-6
- ○ 7 or higher
- ○ No information provided

Illness and care duties

With the questions below, we would like to ask you to assess in how far illness or care duties generally affect your ability to study.

To what extent do the statements below apply to you?

	Disagree	Rather disagree	Partly agree, partly disagree	Rather agree	Agree	No information provided
A **disability or chronic illness** affect my ability to study.	○	○	○	○	○	○
Care duties (e.g. childcare or care for family members) affect my ability to study.	○	○	○	○	○	○

Disturbances

On average, how many hours per day do you have the opportunity to go online for study-related activities, e.g. to participate in a webinar or video conference without being disturbed?

- ○ Not at all
- ○ Less than two hours
- ○ Between 2 and under 4 hours
- ○ Between 4 and under 6 hours
- ○ Between 6 and under 8 hours
- ○ 8 hours or more

Teaching/learning situation

To what extent do you agree with the statements below with regard to your teaching/learning situation in the summer semester 2020?

	Agree	Rather agree	Partly agree, partly disagree	Rather disagree	Disagree	I do not know.
I would rather not have others see me and my personal space, e.g. in video conferences.	○	○	○	○	○	○
Individual consultation with teaching staff regarding classes is important to me even in circumstances of physical distance.	○	○	○	○	○	○
I am willing to engage with digital teaching and learning formats more extensively.	○	○	○	○	○	○
My motivation to study will decline if teaching is only offered in digital form.	○	○	○	○	○	○
I am worried that remote teaching will restrict opportunities for discussion and exchange of ideas regarding the subject matter.	○	○	○	○	○	○
I am worried that I may be at a disadvantage if examinations are held in digital form.	○	○	○	○	○	○
I can also communicate with my fellow students in digital form.	○	○	○	○	○	○

Risks

Do you see any risks if classes are exclusively held online? If so, which ones? Please explain briefly

- ○ Yes, I see risks, namely: _____
- ○ No, I do not see any risks.
- ○ I do not know.

Opportunities

Do you see any opportunities if classes are exclusively held online? If so, which ones? Please explain briefly.

- ○ Yes, I see opportunities, namely: _____
- ○ No, I do not see any risks.
- ○ I do not know

Feedback or comments

If you have any further feedback or comments, please enter them here:

_____

End page

You have reached the end of the survey.

Thank you very much for your participation.
During the survey, we referred to **virtual desktops, campus and state licence agreements** and **access via VPN (Virtual Private Network)** provided at UDE. Please find further information below if you need any.
Students have access to a large software portfolio via **virtual desktops** from both public PC pools and computers in the library and their personal devices. You do not need to install any software to use this service. Please refer to this web page for information on how to use virtual desktops: https://www.uni-due.de/zim/en/vdi-access.php.
A large software portfolio is available to students as part of **campus and state licence agreements**. In many cases, the software can be used for free. Please refer to the following web page for information on the software, terms of use and download options: https://www.uni-due.de/zim/services/software/softwareliste-stud.
If you try to access UDE services from outside the university network, you will be denied access to some services. This includes licensed services such as software or access to e-books. Accessing via **VPN (Virtual Private Network)**, which establishes a tunnel to the university network, will remedy this problem. Thus, your entire data traffic will be routed through our VPN server via an encrypted connection. While the connection is active, you will be assigned an IP address within the university network. Please refer to this web page for further information on VPN: https://www.uni-due.de/zim/en/vpn.php.

You can now close this browser window.

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