

**Exploring the experiences and concerns
about privacy and security in online
teaching by students and teachers in the
United Kingdom and Kingdom of Saudi
Arabia**

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Abstract

This research programme investigated experiences of online teaching and related privacy and security concerns before and since the pandemic among HEI students and teachers in the United Kingdom (UK) and the Kingdom of Saudi Arabia (KSA). As there is little cross-cultural research on these issues, five studies were conducted to explore them.

Studies 1 and 2 were online surveys with students. UK students reported difficulties due to the pandemic with practical, interaction, and social isolation. In contrast, KSA students reported difficulties with focus, engagement, and technical issues. UK students used webcams selectively, whereas KSA students reported little use. Privacy and security concerns were low among UK students but moderate among KSA students.

Studies 3 and 4 were online surveys with teachers. UK teachers struggled with students not using their webcams during online teaching, whereas KSA teachers faced communication and assessment issues. Both groups reported difficulties with student engagement. KSA teachers reported low webcam use, whereas UK teachers reported high use. Privacy and security concerns were low among UK teachers but moderate among KSA teachers.

Study 5, a field study in a KSA HEI, found neither students nor teachers used webcams in teaching. Students cited flexibility, distractions, and privacy concerns, whereas teachers cited distractions and security concerns. Students reported high levels of privacy concerns about their institutions but only moderate concern about teachers and classmates. Complex relationships were found between students' online privacy, security concerns and trust.

Studies 6 and 7 were online surveys which explored KSA and UK HEI teachers experiences and attitudes in more detail. Both groups valued webcam use for engagement, but UK teachers felt self-conscious and struggled with students' webcams presence, while KSA teachers had privacy, security and cultural concerns. Both groups were uncertain about institutional webcam policies and expressed limited satisfaction with privacy and security guidelines.

These findings highlight the need to address webcam use and privacy and security concerns in online teaching in relation to cultural and educational contexts.

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Declarations

I declare that this thesis is a presentation of original work and that I am the sole author unless otherwise indicated in the text. This work has not been previously presented for an award at this, or any other, university. All sources are acknowledged as references. Parts of this thesis have been used in the following publications:

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Glossary of abbreviations

Blended Teaching	A mixture of face-to-face and online teaching
CFA	Confirmatory factor analysis
CFIP	Concern for Information Privacy Scale
CS	Computer Science
GDPR	General Data Protection Regulation
HCI	Human-Computer Interaction
HE	Higher education
HEI	Higher education institution
HEI teacher	All those who teach in an HEI context. Not all “academics” or “faculty members” teach and some who teach do not fall into either of these categories.
ICT	Information and communication technologies
ISA	Information Security Awareness Scale
IUIPC	Internet Users’ Concerns about the Privacy of Their Information Scale
KSA	Kingdom of Saudi Arabia
MoE	Ministry of Education
NSS	National Student Survey
OfS	Office for Students
OTE	Online Teaching Environment includes VLEs, videoconferencing technologies (e.g., Zoom, MS Teams), chat technologies (e.g., MS Teams chat, Slack, WhatsApp), proctoring technologies (e.g., Respondus, ProctorU), and hardware such as webcams and microphones that support communication and engagement in online teaching.
OTS	Online Teaching Session refers to specific online teaching sessions, such as lectures, small group discussions, or lab sessions
PCA	Principal component analysis
PDPL	Personal Data Protection Law
SA-6	Self-Report Measure of End-User Security Attitudes Scale
SeBIS	Security Behavior Intentions Scale
SEU	Saudi Electronic University
SIQR	Semi-Interquartile Range
TEF	Teaching Excellence Framework
UK	United Kingdom
USSS	University Student Service System
UNESCO	United Nations Educational, Scientific and Cultural Organization
VLE	Virtual learning environment

Chapter 1: Introduction

As a result of the coronavirus pandemic, higher education institutions (HEIs) around the world were forced to move suddenly and almost entirely to online teaching, starting in March 2020 (Crawford et al., 2020; Marinoni et al., 2020). UNESCO (2021) estimated that more than 220 million students in higher education (HE) worldwide were affected by the pandemic. Students began to learn and study online at very short notice and without the previous expectation that this would be how they would undertake their HE courses and assessments. This transition required major changes in teaching methods. Face-to-face lectures, seminars, practical sessions, and other teaching methods were replaced with online equivalents where possible or suspended if this was not possible. Examinations were moved online or changed to more appropriate online forms of assessment. This precipitous change caused considerable stress for both teachers and students (Patterson et al., 2021; Pressley et al., 2021).

Although many HEIs were already using online systems such as virtual learning environments (VLEs) to facilitate teaching before the pandemic, the use of a range of different digital technologies greatly increased when HEIs were forced to move to fully or nearly fully online teaching. This sudden move to the use of many different digital technologies also initiated much discussion of the privacy and security issues of these technologies in relation to online teaching. Some studies of HEI teachers¹ experiences of the pandemic have highlighted privacy and security concerns: for example, how to monitor whether students were participating in sessions, whether the teaching experience was more effective with teachers and students having their microphones and webcams on during sessions, how to monitor assessments and examinations for collusion and cheating? (Balash et al., 2021; Gherhes et al., 2021; Kim, 2021; Yarmand et al., 2021).

An incident that occurred at Taif University in the KSA in September 2021, showed these concerns. Some inappropriate comments by a teacher in a live online lecture went viral through a recorded audio clip. The university condemned the comments as "individual behaviour" not reflecting the values of the institution and promptly initiated an investigation. Subsequently, disciplinary action was taken against the teacher (Al-Watan, 2021). The details of the outcomes and the extent of the

¹ I use the term to cover all those who teach in an HEI context. Not all "academics" or "faculty members" teach and some who teach do not fall into either of these categories

University's response have not been widely reported. This incident represented one of many potential privacy risks of online teaching environments (OTEs).²

Similar privacy and security concerns have been expressed at UK HEIs, for example, the 2022 Cyber Security Breaches Survey reported 92% of HEIs faced breaches or attacks. HEIs face risks such as phishing attacks, ransomware, and unauthorized access to sensitive data (Department for Digital, Culture, Media & Sport, 2022). KSA universities have also been targets of cyberattacks. In January 2012, the King Saud University official website was hacked and data stolen from over 800 users, including both teachers and students, comprising names, email addresses, mobile phone numbers, and passwords, exposing the security vulnerabilities in the university's systems (The Hacker News, 2012; Cyberlands, 2024).

Despite numerous studies on HEI students' experiences with digital technologies since the pandemic, there has been little research on their security and privacy concerns. For example, Kim's (2021) study with South Korean students found that concerns about privacy and security negatively impact students' willingness to participate in online sessions (see Section 2.1.3 for a more detailed discussion). Therefore, this research programme investigated the experiences and concerns of students regarding privacy and security in online teaching in the UK and KSA HEIs before and since the COVID-19 pandemic (Studies 1 and 2).

Similarly, while general studies have explored teachers' attitudes toward online teaching (e.g., Alhubaishy & Aljuhani, 2021; Alqahtani et al., 2022), there is a lack of research on teachers' privacy and security concerns with the digital technologies used since the pandemic. This research programme also investigated the experiences and concerns of teachers regarding privacy and security in online teaching in the UK and KSA HEIs (Studies 3 and 4). For this research programme, privacy is defined as the right of students and teachers to control the collection, use, and sharing of their personal data, appearance, physical location, personal space, knowledge, and contributions within online teaching. Security is defined as protecting this data ensuring it remains private, accurate, and accessible only to authorized individuals.

Since the COVID-19 pandemic, several studies have investigated HEI students' attitudes about using webcams in online sessions, especially why many choose not to turn them on (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Dixon & Syred, 2022; Gherheş et al., 2021; Rajab & Soheib, 2021). Although conducted in different countries (Germany, the USA, the UK, Romania, and KSA, respectively), all found that students were reluctant to turn their webcams on during online teaching. Reasons given varied: shyness, anxiety, and appearance, but most of the studies showed privacy issues

² Online Teaching Environment (OTE) includes VLEs, videoconferencing technologies (e.g., Zoom, MS Teams), chat technologies (e.g., MS Teams chat, Slack, WhatsApp), proctoring technologies (e.g., Respondus, ProctorU), and hardware such as webcams and microphones that support communication and engagement in online teaching.

as major concerns. This research aimed to explore these issues further by investigating the levels of webcam use and the reasons for having webcams off among KSA HEI students and teachers in online classes, as well as examining the relationship between privacy, security, and trust in various actors involved in online teaching for KSA HEI students (Study 5). For this research, trust refers to confidence in the reliability, integrity, and competence of various actors in online teaching. This includes students' trust in their teachers, classmates, their VLE, and the HEI as a whole (see Section 2.1.1). In various studies (Yarmand et al., 2021; Hosszu., 2021) teachers have highlighted the difficulty of engaging with students whom they are unable to see because their webcams are off. Despite this, little research has focused on wider aspects of teachers' attitudes toward webcam use in teaching sessions. To address this, this research also investigated teachers' attitudes in the UK and KSA HEIs toward webcam use and associated privacy and security concerns. It also explored teachers' perceptions of how webcam use affects their own teaching experience and that of their students (Studies 6 and 7).

There are several motivations for investigating attitudes in the UK and KSA. Firstly, the two countries have very different HE systems that reflect their distinct cultures. The UK features a decentralized education system with HEIs are largely responsible for determining their own curricula and securing some of their own funding. In contrast, KSA has a highly centralized HEI system governed by the Ministry of Education, which controls curricula, policies, and funding (OECD, 2020). The educational philosophies of the UK and KSA also show major contrasts in their approaches to critical thinking and pedagogy. At the HE level, the UK system follows a student-centred philosophy that focuses on encouraging students to question, analyse and evaluate information (Hammersley-Fletcher & Hanley, 2016). Teachers in the UK are viewed as facilitators and guides encouraging students to engage in independent thought, discussion, and self-directed learning.

Conversely, the KSA education system embodies a traditional teacher-centred philosophy (Gulnaz et al., 2015; Klatt et al., 202) relying more on teacher-led instruction often prioritizing memorization over critical analysis and application of knowledge (Gulnaz et al., 2015). Teachers in this system are viewed as the primary source of knowledge which can promote passive learning and restrict students from asking questions thus maintaining the teacher's authority in class. Another major difference is gender segregation. In the UK institutions are generally co-educational whereas KSA practices gender segregation in most HEIs (Section 2.7).

Using Hofstede's cultural dimensions analysis, the two cultures show differences in all six of his cultural dimensions especially in Power Distance, Individualism, and Uncertainty Avoidance (Section 2.4). These structural and cultural differences are likely to influence attitudes toward online teaching, privacy, and security. For instance, the UK's emphasis on individual expression may lead to

different privacy and security concerns compared to KSA's more collective and community-oriented expression.

1.1 Research aims and objectives

There are six main aims for this research programme, to investigate:

1. the concerns and experiences related to privacy and security in online teaching among students in the UK and KSA HEIs before and since the pandemic (Studies 1 and 2).
2. the concerns and experiences related to privacy and security in online teaching among teachers in UK and KSA HEIs before and since the pandemic (Studies 3 and 4).
3. the levels of webcam use and the reasons for having webcams off among KSA HEI students and teachers in online classes (Study 5).
4. the relationship between privacy, security and trust in various actors involved in online teaching for KSA HEI students (Study 5).
5. how the use of online teaching and webcams, as well as concerns about privacy and security, have changed for UK and KSA HEI teachers due to the pandemic (Studies 6 and 7).
6. UK and KSA HEI teachers' current perceptions of the impact of webcam use on their own teaching experiences and on their students' experiences in online teaching (Studies 6 and 7).

1.2 Research approach

This thesis presents a mixed-methods research programme consisting of seven interconnected studies that collectively investigate privacy, security, and trust in online teaching within HEIs in the UK and KSA. The programme began with Phase 1, of four exploratory online surveys (Studies 1 to 4), which gathered both quantitative and qualitative data on the experiences and concerns of students and teachers in both the UK and KSA. Findings from these exploratory studies informed the design in Phase 2 of a more targeted field study (Study 5) conducted at the SEU in KSA, which focused on collecting immediate quantitative data about webcam use and related privacy and security concerns after online classes. Phase 3 followed up with more specific online surveys of HEI teachers in both the UK and KSA, to understand their practices and concerns regarding online teaching and webcam use. An overview of the three-phase research programme and the seven studies is shown in Figure 1.1.

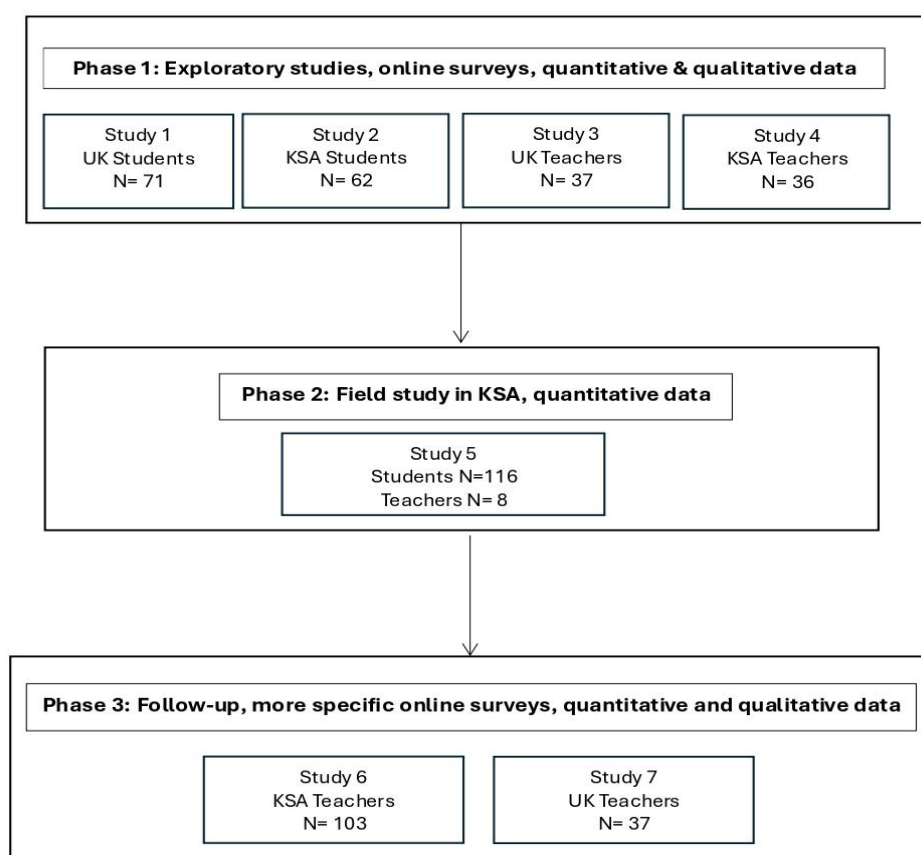


Figure 1.1 Overview of the three-phase research design

I chose an online questionnaire approach for several reasons. I started my research in April 2021, during the pandemic. The social distancing measures and restrictions on face-to-face interactions at that time made online questionnaires the safest and most practical option. Also, questionnaires are effective for collecting data from geographically dispersed samples allowing me to include participants in a range of HEIs in both the UK and KSA without the need for physical travel. This method also allows for a mix of closed-ended and open-ended questions. It ensures the collection of detailed and structured data that captures a broad range of participant experiences and perspectives.

In all studies, to analyse the quantitative data, I used non-parametric statistics as much data was not normally distributed, which is often the case with rating data (Field, 2013). Additionally, the non-parametric descriptive statistics of medians and semi-interquartile ranges (SIQRs) are less affected by outliers and skewed data which provides a more accurate representation of central tendency and dispersion for the rating data collected in these studies. The Wilcoxon One Sample Signed Ranks Test was used to determine if the distribution of ratings significantly differed from the

midpoint of a Likert scale. Given the large sample size (more than 30 observations in all my samples), the Z statistic for normal distribution approximation was used (Siegel & Castellan, 1988).

For the qualitative data, inductive thematic analysis was conducted (Braun et al., 2019) with no prior assumptions about emerging themes. The procedure involved reading all responses multiple times, developing preliminary themes, and refining them through repeated analysis. Themes were sometimes subdivided into sub-themes. However, due to the relatively small amount of data in some cases, this was not always necessary.

For Study 5, I conducted a field study at Saudi Electronic University (SEU) in KSA, an HEI which uses blended teaching, combining traditional face-to-face classes with online classes. The study involved both students and teachers from the Computer Science (CS) Department and focused on undergraduate students enrolled in a range of synchronous CS courses, spanning all levels of undergraduate study (i.e., Years 1 to 3). Students attend two classes per week for each course, one online and one in person, both are lectures lasting one hour. The study included three phases for students: a questionnaire at the start of the study, another immediately after attending an online class, and a final one at the end of the study. Teachers teaching those classes participated by completing two questionnaires: one before the study and one immediately after the online class.

The pre-study questionnaire aimed to measure students' privacy and security concerns about online teaching, as well as their trust in various actors and entities. I adapted several existing scales on online privacy (Kim, 2021; Peng & Dutta, 2022), security (Kim, 2021), and trust (Ejdys, 2018; Cavanagh et al., 2018; Rice & Schroeder, 2021). I also developed new items to address specific concerns relevant to the context of online teaching sessions, such as concerns about appearance, physical location, personal space, knowledge, and contributions. The post-online class questionnaire, completed immediately after the target online class, gathered information on webcam use and privacy/security concerns in the target class. It also identified reasons for having webcams on or off. The post-study questionnaire aimed to measure students' general security behaviour, concerns about online privacy on social media, and trust in digital technologies. It included adapted scales from the research literature on online security (Egelman & Peer, 2015), privacy concerns in social media (Peng & Dutta, 2022), and trust in digital technologies (Ejdys, 2018). The teachers completed two questionnaires. The pre-study questionnaire investigated their attitudes towards using webcams and previous experiences with online teaching. The post-online class questionnaire addressed their webcam use during the class, their reasons for having their webcam on or off and their awareness of students' webcam use.

I chose a field study approach to understand participants' experiences and attitudes towards webcam use in greater detail by having them answer questionnaires immediately after their online

classes. Unlike a retrospective approach, this immediate data collection hopefully more accurately captures students' and teachers' attitudes. To analyse the large number of items measuring online concerns about privacy, security and trust collected in this study, Principal Component Analysis (PCA) was used to group the items with the least loss of information (Jolliffe & Cadima, 2016).

In Studies 6 and 7, online questionnaires were given to UK and KSA HEI teachers to elicit both quantitative data (answers to multiple-choice questions and 7-point Likert items) and qualitative data (answers to open-ended questions). The research aimed to investigate teachers' experiences, concerns, and practices regarding online teaching, webcam use, and privacy and security before and since the pandemic. I chose an online questionnaire for these two final studies for several reasons. Due to HEI teachers' high workloads, it was difficult to recruit teachers for Studies 3 and 4. This influenced the design of Studies 6 and 7, where the questionnaires were kept as brief as possible.

Given these constraints, other methods such as conducting interviews would have been challenging. A questionnaire also provided a standardized format, allowing for consistency in the data collection process. While interviews provide rich detail, they can lead to variability in responses due to differences in questioning styles or interpretation. Also, they offered anonymity encouraging participants to share honest and open responses, especially on sensitive topics like privacy and security (Tourangeau & Yan, 2007). Interviews may not provide the same level of comfort for participants. This approach balanced the practical challenges of recruitment with the need to collect meaningful data on teachers' experiences and concerns. As with Studies 1 to 4, the questionnaire elicited both quantitative data (answers to multiple-choice questions and 7-point Likert items) and qualitative data (answers to open-ended questions). The data analysis was conducted in the same manner as in those studies.

1.3 Research contributions

To the best of my knowledge, this is the first programme of research to investigate privacy and security issues of both teachers and students in online teaching before and since the pandemic at HEIs in the UK and KSA. It began by investigating the experiences and concerns related to privacy and security in online teaching before and since the pandemic for UK and KSA HEI students and teachers with a series of online surveys. Next, a field study at a university in KSA was conducted to collect data immediately after online classes, to obtain more detailed and accurate information about KSA teachers' and students' experience of webcam use in online teaching and their privacy and security concerns. It also explored the relationships among KSA students' privacy, security concerns and trust. Finally, online

surveys to investigate how the use of webcams and concerns about privacy and security in online teaching have changed for KSA and UK HEI teachers due to the pandemic. It explored teachers' current perceptions of the impact of webcam use on both their own teaching experiences and their students' experiences in online teaching.

The main findings of this programme of research are:

Studies 1 to 4 investigated students and teachers in the UK and KSA experience and concerns related to privacy and security in online teaching—both before and since the pandemic.

Studies 1 and 2 with UK and KSA students found differences between HEI students' experiences and concerns in the two countries. In the UK, students rapidly shifted from face-to-face to fully online teaching. Many reported difficulties adapting to practical and group sessions, less interaction and social isolation. In contrast, KSA students, who had more prior experience with blended teaching, transitioned less dramatically often from blended to fully online. They faced challenges with focus, engagement, and technical difficulties.

Regarding webcam use, UK students used webcams selectively depending on the type of OTSs, whereas KSA students reported very low webcam use. Privacy and security concerns varied between countries as well. UK students reported very low levels of privacy and security concerns in online teaching. In contrast, KSA students expressed moderate levels of concern.

Studies 3 and 4, which focused on teachers in the UK and KSA, found similarly contrasting findings. Like UK students, UK teachers rapidly shifted to fully online teaching. By contrast, for KSA teachers, who already had experience with blended teaching, the transition was less dramatic being often from blended to fully online, much like KSA students. Both teacher groups identified student engagement as a major challenge, but other concerns varied. UK teachers reported that many students did not turn on their webcams. In contrast, KSA teachers were more concerned about communication and assessment issues.

Another key difference between the countries was in teachers' webcam use, which closely reflected those reported by the students. UK teachers used webcams selectively, depending on the type of OTSs, while KSA teachers reported very low levels of webcam use. Privacy and security concerns varied as well. UK teachers reported very low privacy and security concerns in online teaching, whereas KSA teachers expressed moderate concern.

Study 5, the field study in KSA, found neither students nor teachers used webcams in teaching, although their reasons differed. Students cited flexibility, distractions, and privacy as key reasons, while teachers were more focused on distractions and security reasons. Interestingly, students showed high levels of concern about their institutions but only moderate concern about teachers and classmates. Privacy concerns were positively associated with trust in teachers.

Studies 6 and 7 found differences in how UK and KSA HEI teachers used webcams and how they perceived privacy and security risks. UK teachers showed no significant differences in overall webcam use before and since the pandemic, as they were already using webcams for online teaching in live lectures, small group discussions, and one-to-one sessions. However, KSA teachers reported a significant increase in webcam use in online teaching during live lectures and small group discussions. Privacy and security concerns were also different between the two countries: UK teachers' concerns significantly increased due to the pandemic, focusing on the exposure of their physical locations and personal spaces. In contrast, KSA teachers' concerns remained stable, with the main focus on unauthorised images and voice recordings. Both groups valued webcam use for engagement and communication, but UK teachers felt self-conscious and struggled with students not turning on their webcams, while KSA teachers had privacy, security and cultural concerns. Both groups were uncertain about institutional webcam policies and expressed limited satisfaction with privacy and security guidelines.

Thus, the overall contributions of this programme of research are:

It contributes by examining privacy and security experiences and concerns in online teaching among both students and teachers in two different countries with very different cultural and educational contexts: the UK and the KSA. Previous work often focused on a single group or a single country, with very few studies investigating the effects of culture and educational systems on online teaching and the use of technologies in online teaching.

A key methodological contribution is the use of data gathering immediately after online classes in Study 5. Unlike traditional surveys that rely on retrospective self-reporting, this approach captured students' concerns and trust levels immediately after their online teaching experiences, offering potentially more detailed and accurate information and enabling comparison with the survey data collected earlier in the programme of research. By combining established scales and adding relevant new questions, this study also assessed students' privacy and security concerns and their trust in a range of actors in online teaching. This contributes to an understanding of how students' attitudes on privacy, security, and trust influence their attitudes toward online teaching.

The research also shows the role of institutional policies in addressing concerns about data protection, unauthorized recordings, and webcam use. It emphasises the need for clear transparent guidelines to build trust, enhance teaching practices and encourage better use of technology in online teaching.

1.4 Positionality Statement

Before the COVID-19 pandemic, I worked for five years as a lecturer in CS at the SEU, a government-funded university in KSA. SEU has 15 campuses across KSA, with a student population exceeding 49,000, and more than 1,024 teachers. The university offers undergraduate and graduate programmes through four main colleges: the College of Administration and Financial Sciences, the College of Computing and Informatics, the College of Health Sciences, and the College of Science and Theoretical Studies (Saudi Electronic University, 2025). SEU was the first university in KSA to adopt a blended teaching model, combining online and face-to-face modes of teaching. This approach has become the standard across its programmes before the pandemic and continues to be used today. Each course typically includes two formal teaching sessions per week: one delivered online via Blackboard and the other held in person on campus. The teaching is mainly lecture-based, and class sizes generally range from 7 to 30 students. As is standard practice in KSA, male and female students are taught in separate classes, usually by teachers of the same gender.

As a lecturer at SEU, I taught undergraduate students using a blended mode. Each course included one weekly online lecture via Blackboard and one face-to-face session on campus. Before the pandemic, I did not ask students to turn on their webcams during online sessions, and they generally kept them off without raising the issue. I also kept my own webcam off, as its use was neither expected nor encouraged, and it was rarely discussed among teachers or students. Sometimes, I delivered up to five one-hour online lectures in a single day, followed by in-person sessions the next. This mix of online and face-to-face contact helped ease the mental and emotional pressure of online teaching. Seeing students in person allowed me to build rapport, gauge their understanding, and feel more connected—things that were harder to achieve in online settings alone.

Teaching to a screen full of blank icons made it difficult to tell whether students were engaged, confused, or even present. This often left me feeling mentally drained and disconnected. I raised these concerns with several female colleagues, who reported similar experiences. Although I did not discuss this issue with male colleagues, it appeared that low webcam use was particularly common in female-only classes. At the time, webcam use had not yet become part of standard teaching practice at SEU, and there was no institutional guidance promoting it.

When the COVID-19 pandemic began in 2020 and teaching became fully online, the situation became more challenging. Face-to-face classes were removed, and I had to deliver up to five hours of online teaching per day over two days each week. These were formal teaching sessions with class sizes typically ranging from 7 to 25 students. Before the pandemic, I had relied on the in-person sessions to build relationships, check for understanding, and re-engage students. Losing that contact made it

much harder to assess whether students were paying attention or participating. I often ended classes feeling frustrated and isolated. Speaking into a screen without visual feedback made it difficult to adapt my teaching or respond to students' needs. This experience led me to reflect more seriously on the reasons students and teachers chose not to use their webcams.

At the same time, the university moved final examinations online and implemented webcam-based proctoring systems. These systems recorded the examination sessions and automatically flagged behaviours such as students moving, looking away from the screen, or leaving their seats. As a lecturer, I was not involved in live monitoring, but I was responsible for reviewing the flagged recordings after the exams. I had to check each flagged incident and decide whether the behaviour might indicate academic misconduct or was simply a harmless action, such as a student adjusting their seating. If anything seemed serious or unclear, I was required to report it to the examination committee for further investigation.

While I understood the need for such systems during emergency remote teaching, this process raised questions for me about privacy and data protection, particularly in terms of video storage, access, and duration. I felt uncomfortable reviewing videos recorded in students' private home environments, especially given the cultural sensitivities around privacy in KSA, particularly for female students. Although I followed university procedures, I often wondered how this might have affected students' comfort and willingness to participate in exams.

These experiences, including teaching to blank screens, feeling disconnected from students, and reviewing webcam recordings that felt intrusive, made me reflect deeply about the challenges students face in online teaching. I started to think seriously about exploring the concepts of privacy, security, and trust, and how these issues might influence students' behaviour and participation. These thoughts became one of the main reasons that motivated me to pursue my PhD and to conduct research on the issues of privacy, security, and trust for both students and teachers in online teaching.

In April 2021, I moved to the UK to start my PhD. At that time, teaching at the University of York was still following a hybrid model due to the pandemic. I observed online teaching sessions by attending departmental seminars, research group meetings, and in particular because I audited the Research Methods module on the Master's in Human-Centred Interactive Technologies in the Autumn term of 2021. During this time, I noticed that lecturers in the UK were likely to have their webcams on while teaching, and some students did the same. In addition to webcam use, there were also differences compared to my experience of teaching in KSA, in how students participated in classes. For example, students asked questions and responded in the chat, and lecturers encouraged this kind of interaction. These patterns stood in contrast to what I had experienced in KSA, where webcam use and active participation were generally much lower. Observing these differences made me reflect on

the cultural and institutional factors influencing online teaching practices. This led me to explore the experiences and concerns around privacy and security in online teaching among students and teachers in both the UK and KSA. These personal and professional experiences were central in shaping my motivation to undertake this PhD research.

1.5 Timeline of COVID-19 Restrictions and Data Collection Context

The timelines in Figures 1.2 and 1.3 show how the COVID-19 restrictions affected HE in KSA and the UK between 2020 and 2022. It includes key events such as lockdowns, the closing of HEIs, the move to online or blended teaching, and the start of the vaccination programs. The timelines also show when my studies (Study 1 to Study 4) were carried out. Figure 1.2 presents the timeline for the UK, while Figure 1.3 shows the timeline for KSA.

Studies 5, 6, and 7 were conducted later, outside the main COVID-19 timeline, and are therefore not shown in the figures.

- Study 5 (KSA students and teachers) was conducted in February 2023.
- Study 6 (KSA teachers) in September 2023.
- Study 7 (UK teachers) in October 2023.

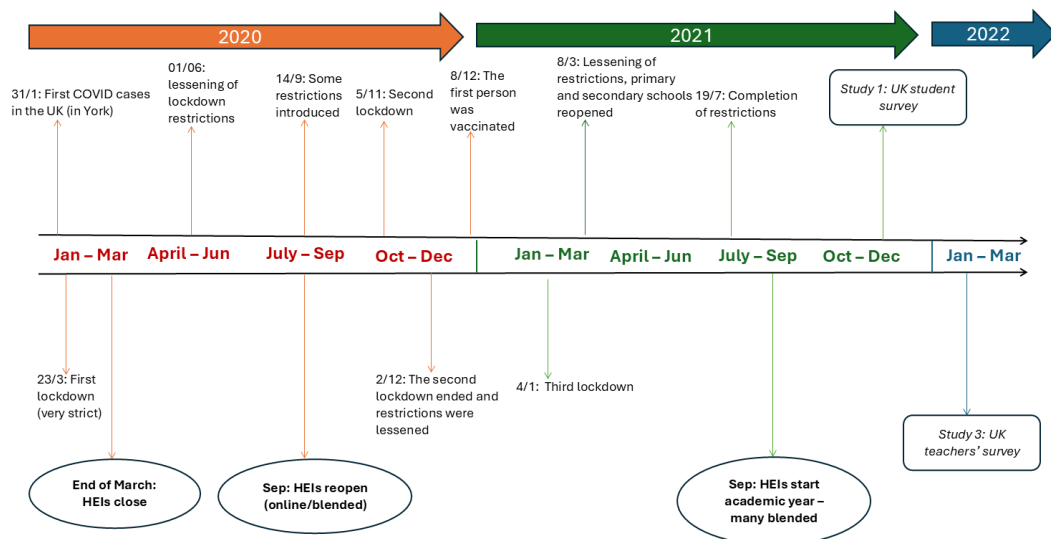


Figure 1.2 UK COVID-19 restrictions, HE changes (oval boxes) and data collection (rectangular boxes) timeline

Note. Data compiled from House of Commons Library (2023), Institute for Government (2021), and Wikipedia contributors (2025a, 2025b).

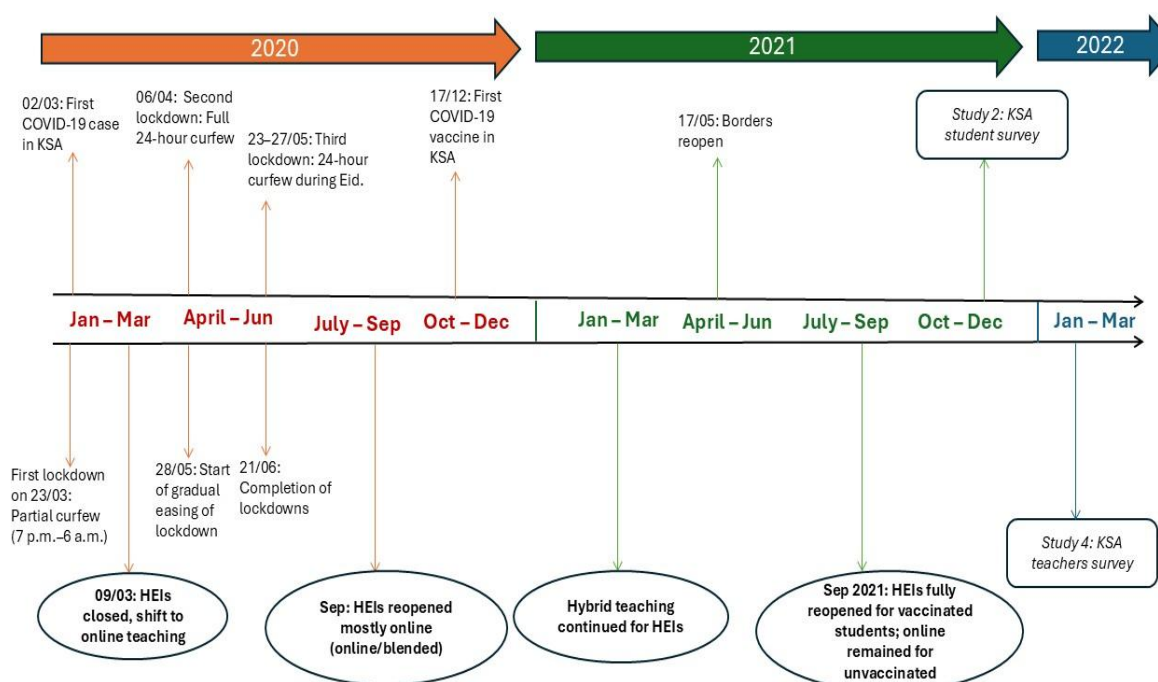


Figure 1.3 KSA COVID-19 restrictions, HE changes (oval boxes) and data collection (rectangular boxes) timeline

Note. Data compiled from Alrashid et al. (2020), Arab News (2021), Khan et al. (2021), Ministry of Health Saudi Arabia (2020–2021), Ministry of Education Saudi Arabia (2020–2021) See the reference list for full details

1.6 Thesis structure

The thesis is organised into nine chapters organised as follows:

Chapter 2 presents a review of the literature on areas relevant to the research programme, including definitions of privacy, security, and trust in online teaching. It also covers research on and measurement of online privacy concerns, online security attitudes, trust in online teaching, and students' and teachers' attitudes toward webcam use in online teaching. Also, an overview of the moving to online teaching during the COVID-19 pandemic in the UK and the KSA. It also outlines the higher education systems in both the UK and KSA, showing cultural differences in attitudes toward privacy and security in HE.

Chapter 3 presents Study 1, an online questionnaire to investigate the experiences and concerns regarding privacy and security in online teaching among 71 students in UK HEIs before and since the COVID-19 pandemic.

Chapter 4 presents Study 2, an online questionnaire to investigate the experiences and concerns regarding privacy and security in online teaching among 62 students in KSA HEIs before and since the COVID-19 pandemic.

Chapter 5 presents Study 3, an online questionnaire to investigate the experiences and concerns regarding privacy and security in online teaching among 37 teachers in UK HEIs before and since the COVID-19 pandemic.

Chapter 6 presents Study 4, an online questionnaire to investigate the experiences and concerns regarding privacy and security in online teaching among 36 teachers in KSA HEIs before and since the COVID-19 pandemic.

Chapter 7 presents Study 5, a field study which investigated KSA HEI students' and teachers' attitudes towards using webcams during online classes, examining privacy and security concerns as well as trust in various entities. A total of 116 students participated in the study, responding to various questionnaires throughout the research process.

Chapter 8 presents Study 6, an online questionnaire which examined how the use of online teaching, webcams, and concerns about privacy and security in online teaching has changed for 103 KSA HEI teachers due to the pandemic. It investigated the impact of webcam use on them and their students, institutional policies, and privacy and security breaches.

Chapter 9 presents Study 7, an online questionnaire which examined how the use of online teaching, webcams, and concerns about privacy and security in online teaching has changed for 37 UK HEI teachers due to the pandemic. It investigated the impact of webcam use on them and their students, institutional policies, and privacy and security breaches.

Chapter 10 presents the overall discussion and conclusions of this research programme, the contributions of the research, limitations, and lessons to be learnt, as well as recommendations for future research.

Chapter 2: Literature Review

This chapter reviews the main areas of literature that helped me develop and carry out my research. I aimed to explore how concerns about privacy, security, and trust are linked to online teaching, and whether these concerns are shaped by culture or institutional rules. I also wanted to understand what is already known about the use of webcams in online teaching and how students and teachers feel about using them. These questions guided the selection and order of the topics covered in the chapter.

The chapter begins by examining how the key concepts of privacy, security, and trust have been defined and studied, particularly within online teaching. While these terms are widely discussed in general, there is less literature directly linking them to online teaching. I therefore included studies that investigated these concepts among students and teachers in online teaching, such as Kim (2021) and Peng and Dutta (2022) on privacy and security, and Ejdys (2018) and Cavanagh et al. (2018) on trust.

Next, I focused on the use of webcams in online teaching, as this became a central concern in my own experience and in my research. I reviewed research exploring how students and teachers in different countries use webcams during online teaching, and the reasons behind their decisions to keep the webcam on or off. While the literature covers multiple countries, I focused on the UK and KSA to understand webcam use within these specific cultural and educational systems.

Because this research compares experiences in two different countries, I also reviewed literature on cultural values and their influence on online teaching. I explored definitions of culture and used Hofstede's cultural model to understand national differences. His dimensions—such as Power Distance, Individualism vs. Collectivism, and Uncertainty Avoidance—provided a useful lens for interpreting differences in attitudes toward privacy, security, and trust.

Finally, I reviewed how HEIs in the UK and KSA responded to the COVID-19 pandemic and how those responses affected teaching practices and technology use. I examined changes in students' and teachers' attitudes toward online teaching, and included background on the structure of HE systems in both countries to provide a relevant context for the research.

Literature not directly relevant to this focus—such as highly technical studies in cybersecurity, or research from business and healthcare sectors—was excluded in order to maintain a clear, education-focused scope.

2.1 Privacy, Security and Trust in Relation to Online Teaching

2.1.1 Definitions of Privacy, Security and Trust

Privacy, as a general concept, is complex and has been defined and discussed in various ways by different thinkers. Warren and Brandeis's work in 1890 is often considered the starting point for the definition of privacy, describing privacy as the "right to be left alone" (cited in Woogara, 2001, p. 238). This introduced the idea of protecting individuals from unwanted intrusions. The legal researcher Gutwirth (2002) defined privacy as the ability of individuals to control the collection, use, and sharing of their data. He explained that privacy is a fundamental human right that enables people to maintain their autonomy and dignity and protects their personal and sensitive data from unauthorized access and use. Gutwirth also showed that privacy is not an absolute concept but is influenced by cultural, legal, and technological factors. Similarly, Goold (2009), a political researcher, argued that privacy can be defined as the right of individuals to have autonomy and control over their personal data and communication in the context of government surveillance and regulation. Nissenbaum (2010) introduced the concept of "contextual integrity" in privacy which is especially relevant in online teaching contexts where sharing personal data with educational institutions may be acceptable but sharing that same data with classmates or external platforms without consent may not be. Richards (2021) offered a modern perspective, defining privacy as "the degree to which human information is neither known nor used" (p. 22). He stressed the importance of balancing the need for data collection with the responsibility to prevent its misuse.

Several scholars have developed categories to better understand and manage various facets of privacy. Finn et al. (2013) introduced seven categories of privacy:

- Privacy of the person: the right to protect bodily functions and features using technology such as fingerprint and face scanning.
- Privacy of behaviour: protecting personal information from being observed or monitored by external actors, especially organizations and government agencies.
- Privacy of communications: the ability of individuals to control access to and use of information exchanged in their communications.
- Privacy of data and images: protecting sensitive information such as medical records, financial information, and photographs, ensuring that it is not shared without consent.
- Privacy of feelings and thoughts: the right to keep personal beliefs and thoughts confidential and protected from unauthorized access.

- Privacy of location and space: refers to people who can move around freely in public places without being constantly tracked, monitored, or identified.
- Privacy of association: refers to an individual's right to associate with others freely and without interference from the government or any other outside entity.

Building upon Finn et al.'s (2013) categories, for this programme of research I concentrated on four types of privacy in relation to online teaching:

- Privacy of data and images: protecting sensitive data such as students' or teachers' names, addresses, photos and video recordings, and other personally identifiable information
- Privacy of physical location and personal space: maintaining students' and teachers' physical space from unauthorized access during online teaching activities such as their home settings which might be visible during online classes.
- Privacy of knowledge and contributions in online activities: protecting the intellectual property and personal contributions of students and teachers within OTEs. This includes protecting the originality and ownership of ideas, discussions, and materials shared during online teaching activities, such as forums and chat rooms. For instance, when students submit essays, research papers, or participate in group projects, it is essential to ensure these works are not distributed or shared with peers or external entities without explicit consent.

I have also added one category, expanding on the idea of both “data and images” and “physical location and personal space”:

- Privacy of appearance: protection of students' or teachers' physical appearance, this includes facial expressions and clothing from being shared or viewed without consent.

In this research programme, in general, online privacy refers to the right of students and teachers to control the collection, use, and sharing of their personal data, appearance, physical location and personal space, as well as their knowledge and contributions within OTEs.

Security, like privacy, is a complex concept with various definitions. Craighead (2009) defined it as protecting people, information, and assets by ensuring both individual safety and the community's well-being. As part of this definition, information security is specifically concerned with safeguarding digital information and systems from potential threats (Schatz, Bashrouh, & Wall, 2017).

A useful definition of information security is the “CIA Triad” (Samonas & Coss, 2014):

- Confidentiality: information is not made available or disclosed to unauthorized individuals, entities, or processes.
- Integrity: accuracy and completeness of information.
- Availability: information is accessible and usable upon demand by an authorized entity.

However, recent discussions have shown the limitations of the CIA Triad suggesting it may not fully address modern security challenges. For example, Lundgren and Möller (2019) introduced the Appropriate Access (AA) definition emphasising the need to customise security measures to particular stakeholder needs rather than strictly adhering to the CIA properties. This perspective encourages a more flexible understanding of security that considers contextual factors and human behaviour alongside technical measures. The AA definition of security is: an object is secure for a stakeholder if, and only if, for every agent, and every part of the object, an agent has just the appropriate access to that part of the object relative to H. This definition shows the importance of customizing security measures to meet the specific needs of all involved parties while considering both technical requirements and the particular circumstances. For example, the AA definition means that all parts of the OTEs (e.g. OTSs, VLEs, videoconferencing and chat technologies) should provide appropriate levels of access to all stakeholders (e.g. teachers, students, and HEI administrators).

Aldheleai and Bokhari (2015) focused on VLE security and identified six key categories:

- Authentication: making sure only the right students or teachers can access the system by verifying their identity.
- Confidentiality: keeping sensitive data private and safe from unauthorized access.
- Integrity: ensuring that data is accurate and has not been changed without permission.
- Availability: making sure that students can access the system whenever they need to.
- Non-repudiation: ensuring that actions (like sending files) cannot be denied later often by using tools like digital signatures.
- Identity security: protecting the identities of students or teachers from being stolen or misused.

They also explained that VLEs face different types of security risks. For example:

- Passive attacks like eavesdropping or analyzing communication to access private information.
- Active attacks like denial-of-service or malicious code, which can disrupt the system or change important data.

In this research programme, security refers to protecting students' or teachers' data, systems, and identities from unauthorized access, disruptions, or modifications.

Trust is also a multifaceted concept that has various definitions, each showing different dimensions. Mayer et al. (1995) defined trust as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor" (p. 712). Grandison and Sloman (2000) defined it as "a firm belief in the competence of an entity to act dependably, securely, and reliably within a specific context (p.3)".

McEvily et al. (2003) define trust as an expectation, a willingness to be vulnerable, and a risk-taking act. According to Hasnain (2019), organizations characterized by high levels of trust experience reduced competitive attitudes and enhanced teamwork which improves productivity and decision-making.

Researchers have identified different types of trust relevant to different contexts:

- Interpersonal trust: in the context of online teaching, it may take two forms: trust among the community of students and trust between students and their teachers. Trust among students means that other community members will behave cooperatively and honestly (Van Houtte, 2007; Rice & Schroeder, 2021). Students' trust in their teacher means that the teacher understands the challenges students face, accepts students for who they are, and cares about their educational welfare (Reis et al., 2013; Cavanagh et al., 2018).
- Institutional trust: individuals' positive expectations about an organization (Luhmann, 1979; Misztal, 1996). In the context of online teaching, it means that students have positive expectations about their HEI, reflecting the HEI's care for its students, its implementation of ethical and social responsibility principles, and its offering of opportunities for personal development.
- Technological Trust: Muir and Moray (1996) identified three essential aspects of human-machine trust: predictability, dependability, and faith. In the context of online teaching, trust in technology—such as VLEs, videoconferencing technologies, and webcams—refers to students' confidence in the reliability and effectiveness of these technologies to support their learning. This trust reflects their belief in the technology's ability to deliver the information and resources they need while providing a secure and efficient platform for academic activities.

In this research programme, trust is defined as the confidence that students have in the reliability, integrity, and competence of their teachers, classmates, the technologies they use, and their HEI.

In summary, privacy refers to the control individuals have over their personal information; security refers to the measures taken to protect this data and systems from unauthorised access unauthorized access, disruptions, or modifications; and trust refers to the confidence in the reliability, integrity, and competence of various actors in the online teaching environment. Together, these elements create a framework for investigating students' and teachers' concerns about online teaching.

2.1.2 Measuring Privacy Concerns, Security, and Trust

This section reviews existing scales to measure privacy, security concerns, and trust. It aims to choose a scale for measuring students' privacy, security concerns, and trust in online teaching. The selection of appropriate scales is explained in Chapter 7, Section 7.2.3.

Privacy concerns are a major component of research in a number of disciplines and have been evaluated in different ways. Smith et al. (1996) defined privacy concerns as the concerns individuals have regarding how organizations collect, handle, and use their personal information. Malhotra et al. (2004) expanded this definition by emphasising perceptions of fairness and justice in the context of online information privacy. Buchanan et al. (2007) described privacy concerns as individuals' attitudes and behaviours related to the protection of their personal information and their control over access to and use of that information. In this research programme, I defined privacy concerns as the concerns of students and teachers about the protection and control of their personal information. This includes concerns about the collection, use and access by institutions or individuals (such as HEI administrators).

As discussed above, privacy is context-dependent, its measurement will likewise depend on the context. The choice of an appropriate privacy concern measurement in this programme of research is driven by the online teaching context. Numerous scales have been developed to measure different dimensions of privacy concerns, including Smith et al. (1996), Malhotra et al. (2004), Buchanan et al. (2007), Liu et al. (2018), Peng and Dutta (2022), and Kim (2021) (see Table 2.1). One important criterion in the choice of scales to use was that they had been appropriately validated. Detailed information about the validation processes for these scales is detailed in Appendix A1.

As with privacy, numerous researchers have developed scales to measure security behaviours and attitudes, including Egelman and Peer (2015), Bitton et al. (2018), and Faklaris et al. (2019) (see Table 2.2). The validation processes for these scales are detailed in Appendix A2.

Table 2.1 Scales to measure privacy concerns

Scale, Authors, Country	Development sample	Response type	Dimensions (items)
Concern for Information Privacy (CIP) Smith et al. (1996) USA	704 bank, insurance, and credit card issuer employees	7-point Likert items "strongly disagree" to "strongly agree"	15 items Collection (4): concerns about data gathering and lack of transparency in collection practices. Unauthorized secondary use (4): concerns about data being used or shared without consent. Errors (3): concerns about inaccuracies in stored data leading to negative consequences. Improper access (4): concerns about unauthorized individuals accessing personal data due to inadequate security.
IUIPC: Internet Users' Information Privacy Concerns Malhotra et al. (2004) USA	742 non-student households	7-point Likert items: "strongly disagree" to "strongly agree"	10 items Collection (4): concerns about the amount of personal data collected. Control (3): control over the collection and use of personal information. Awareness (3): how collected information is used.
Internet Users' Privacy Concerns Buchanan et al. (2007) UK	1,122 UK HEI students	5-point Likert items: "not at all" to "very much"	16 items concerns about online privacy, including identity theft, excessive data requests, and email security.

Information Privacy Concern Liu et al. (2018) China	117 Chinese participants	5-point Likert items: "strongly disagree" to "strongly agree"	12 items Privacy concerns (4): concerns about misuse, and unauthorized access. Privacy risk (5): perceived risks and uncertainties associated with posting messages on social media platforms (e.g., WeChat). Perceived control (3): users' sense of control over the information shared on social media, including privacy settings and audience management.
Online Teaching Privacy Concern Peng and Dutta (2022) Taiwan	285 Taiwanese students	5-point Likert items: "strongly disagree" to "strongly agree"	15 items Collection (4): concerns about data gathering and lack of transparency in collection practices by e-learning service providers. Secondary use (4): concerns about how personal information may be used for purposes or shared without consent. Unauthorized access (4): concerns about personal information and the potential for unauthorized individuals to access it due to inadequate protection measures. Errors (3): concerns about inaccuracies in stored data leading to negative consequences.
Real-time Online Sessions: Privacy Concerns Kim (2021)	296 students	5-point Likert items: "strongly disagree" to "strongly agree"	4 items Concerns include the visibility of personal data, which may be misused during sessions; unauthorized use of personal information without consent;

South Korea	discomfort with personal details being visible to peers, potentially causing privacy issues; and fears of data being leaked without permission.
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Table 2.2 Scales to measure security behaviours and attitudes

Scale, Authors, Country	Development sample	Response type	Dimensions (items)
SeBIS: The Security Behaviour Intention Scale Egelman & Peer (2015) USA	479 participants	5-point Likert items: "strongly disagree" to "strongly agree"	16 items Device securement (4): assesses how users secure their devices, such as locking screens and using passcodes. Password generation (4): measures behaviours related to creating and managing passwords. Proactive awareness (4): measures users' proactive security behaviours, such as checking links before clicking. Updating (4): evaluate behaviours related to applying software updates and maintaining current versions.
ISA: Information Security Awareness in Smartphone Users Bitton et al (2018)	162 participants	5-point Likert items: "Never" to "always"	47 items Security awareness criteria: assess a user's awareness and understanding of information security, especially in the context of smartphone use.

SA-6: Self-Report Measure of End-User Security Attitudes Faklaris et al (2019) USA	478 participants	5-point Likert items: "strongly disagree" to "strongly agree"	6 items End-user security attitudes: Interest in learning about relevant security measures Motivation to take necessary steps to protect online data and accounts in following a routine for security practices Interest in articles about security threats Attention to experts' advice on protecting online data and accounts Knowledge of steps needed to ensure the safety of online data and accounts
Real-time Online Sessions: Security Attitudes Kim (2021) South Korea	296 students	5-point Likert items: "strongly disagree" to "strongly agree"	4 items Security attitudes in real-time online sessions: attitudes include the perceived security of learning resources, lack of security measures by providers, fears of personal information disclosure from hacking, and disruptions from hackers due to inadequate security.

Table 2.3 Scales to measure different aspects of trust in educational settings

Scale, Authors, Country	Development sample	Response type	Dimensions (items)
Trust in VLE, technology and science and institution Ejdys (2018) Poland	413 university students	5-point Likert items: "strongly disagree" to "strongly agree."	18 items Trust in VLE systems (6): evaluates the level of trust users have in the technology itself. Items include statements about reliability, security, and the perceived competence of the technology in handling user data and tasks. Trust in Technology and Science (5): measures the respondents' general trust in technology and scientific advancements. Items include statements about the reliability of technological solutions and the benefits of scientific progress. Trust in institution (7): assesses the level of trust respondents have in the institution providing the USSS technology. Items include statements about the institution's reputation, transparency, and commitment to student needs.
Technology integration confidence scale Gomez et al. (2022) USA	327 schoolteachers	5-point Likert items: "not confident at all" to "completely confident"	12 items Technology usage (7): teachers' confidence to use and model technological devices and digital tools to support student learning. Technology application (5): teachers' confidence to integrate technological devices into lessons and provide application opportunities for students.

Trust in institution Heffernan et al. (2018) Hong Kong, Sri Lanka	528 participants (203 from Hong Kong, 325 from Sri Lanka)	5-point Likert items: "strongly disagree" to "strongly agree."	4 items Trust in the institution: captures the overall trust students have in the institution. It is a unidimensional construct that reflects students' judgments regarding the institution's ability, benevolence, and integrity.
Trust in institution Chen (2017) Taiwan	371 university students	5-point Likert items: "strongly disagree" to "strongly agree."	3 items Trust in institution: captures students' confidence in their institutions and their belief in the university's commitment to their welfare; included statements such as "This university is trustworthy" and "My school prioritizes student learning rights and benefits."
Sense of classroom community-scale Rovai (2001) USA	38 graduate students	5-point Likert items: "strongly disagree" to "strongly agree."	10 items Trust: assesses the reliance on other community members based on credibility and benevolence.
Teacher-student trust Dong et al. (2021) China	592 student participants students and 17 head teachers	5-point Likert: "strongly disagree" to "strongly agree."	20 items Interpersonal trust (10): used the Scale to assess students' trust in their peers and teachers. Teacher-Student Relationship (10): measures the quality of interactions and relationships between teachers and students.
Trust in teacher Cavanagh et al. (2018) USA	245 undergraduate students	5-point Likert items: "strongly disagree" to "strongly agree."	9 items Trust in teachers (9): measures students' perceptions of their teacher's understanding, acceptance, and care.
Trust in classmates	252 students	5-point Likert items: "strongly disagree" to "strongly agree."	9 items

Ennen et al. (2015)				Propensity to Trust (4): measures the general tendency of individuals to trust others. Perceived Trustworthiness (5): assesses how trustworthy individuals perceive their peers to be.
USA				
Trust in Teacher classmates and self	92 U.S. military service members	5-point Likert items: "strongly disagree" to "strongly agree"	15 items	Trust-in-teachers (10): measures the level of trust participants have in the teachers delivering the mindfulness-based training; includes items that assess perceptions of the teacher's expertise, approachability, and ability to create a supportive teaching environment. Trust-in-Classmates (5): evaluates the degree of trust participants place in their peers during the training; includes items that reflect feelings of safety, reliability, and support among classmates.
Rice & Schroeder (2021)				
USA				

Researchers have also developed scales to measure various aspects of trust in educational settings, including trust in technology (Ejdys, 2018; Gomez et al., 2022), trust in institutions (Chen, 2017; Heffernan et al., 2018), and interpersonal trust, such as trust in teachers and classmates (Rovai, 2001; Ennen et al., 2015; Cavanagh et al., 2018; Rice & Schroeder, 2021; Dong et al., 2021) (see Table 2.3). The validation processes for these scales are detailed in Appendix A3.

All scales discussed in this section rely on self-reported data to measure users' privacy, security, and trust. While self-reports are a valuable tool for understanding users' perceptions and intentions, they have inherent limitations. For example, Wash et al. (2017) demonstrated the potential discrepancy between self-reported behaviours and actual behaviours by collecting both survey data and behavioural data, finding varying levels of accuracy. Similarly, Möller et al. (2013) observed that the reliability of self-reported data can depend on the type of behaviour being measured, with certain behaviours being more prone to misreporting. However, Ng et al. (2009) demonstrated the utility of questionnaires in understanding factors influencing security practices but acknowledged the limitations inherent in self-report method.

2.1.3 Research on Privacy, Security, and Trust in Online Teaching

Before the pandemic, research on online privacy and security generally focused on general concerns related to internet use with limited attention given to issues related to online teaching. Early studies on trust focused on education in general but did not specifically address the context of online teaching. Two studies investigated HEI students' attitudes and concerns regarding online privacy and security, though they primarily addressed students' general online privacy and security concerns. Kim (2013) surveyed American HEI students and found that they showed a good understanding of general online security but had concerns about the protection of personal information in their institution's online systems. Only 40% of respondents felt that their personal information was adequately safeguarded within these systems. Khalid et al. (2018) surveyed Malaysian HEI students and found that they showed a good understanding of protective actions such as ignoring requests for information from unfamiliar sources, but were concerned about their personal information being shared without their consent.

Ejdys (2018) investigated trust in technology among Polish HEI students and found strong links between trust in technology and the institution as well as perceived usefulness and ease of use of technology with trust in the technology significantly influencing students' willingness to keep using it. Cavanagh et al. (2018) examined how institutional and interpersonal trust (between students and teachers) affect student engagement, satisfaction, and loyalty. The study with HEI students from Hong Kong and Sri Lanka assessed trust, satisfaction, and academic behaviours. Both types of trust

significantly predicted student engagement, with trust in instructors having a stronger influence than trust in the institution.

Shortly before the pandemic, Oesch et al. (2020) conducted a large survey in the UK and USA, on the general public's concerns about the security and privacy of group chat technologies. The majority of respondents used group chat technologies regularly but only a small percentage relied on security-focused technologies often choosing technologies based on popularity among friends or co-workers. Privacy concerns were prevalent with over a third of respondents not knowing group members and a fifth fearing negative judgment. These findings while not specific to education reflect broader privacy concerns that may influence the adoption of communication technologies in OTEs.

As the pandemic progressed, research specifically addressing privacy, security, and trust in online teaching became more frequent. For example, a survey in Poland, the UK and the USA identified privacy and security concerns about the use of conferencing and communication technologies (Emami-Naeini et al., 2021). The survey focused on three contexts: working from home, socializing from home, and learning from home. Most respondents had limited choice over the technologies they used, as these decisions were made by their employers or educational institutions. In work and learning contexts, technology features and usability were important factors; in social contexts, familiarity with the technology was more important. Participants expressed concerns about privacy and security in videoconferencing technologies citing reports in the media of risks and vulnerabilities as well as concerns about personal space exposure and third-party data selling. Encryption and reputable brands were valued. The researchers concluded that privacy and security are major factors in comfort and attitudes towards videoconferencing.

Almaiah et al. (2020) conducted interviews with students and teachers in Jordan and KSA about online teaching challenges. They identified three key challenges: change management concerns, technical issues with online teaching systems, and financial support shortages. Technological factors such as system quality, trust in data privacy and security, and self-efficacy were identified as critical to the adoption of online teaching. Trust in the internet and institutional systems fostered confidence among both teachers and students promoting wider adoption of online teaching methods. Similarly, Anwar and Greer (2012) emphasized the importance of institutions addressing privacy concerns through ethical and transparent data practices to build trust in OTEs. By showing clear data management practices, institutions can enhance students' and teachers' confidence in OTEs which helps improve engagement and collaboration.

Kim (2021) explored the motivators and barriers influencing South Korean HEI student participation in online classes with a particular focus on privacy and security concerns. Perceived usefulness and peer behaviour positively influenced participation while ease of participation had an

indirect effect by enhancing other factors. Conversely, security and privacy concerns emerged as significant barriers that reduced the ease of participation and deterred engagement. Kim concluded that addressing these challenges requires implementing robust security measures that educate students about privacy protections. Alammary et al. (2022) investigated awareness of security and privacy settings for videoconferencing among KSA HEI teachers. Overall awareness of security and privacy settings was poor. Factors associated with higher awareness included security policy awareness, familiarity with the videoconferencing platform, digital literacy, and privacy concerns. The rapid transition to online teaching since the pandemic likely contributed to the low awareness levels. Many teachers were new to using videoconferencing technologies regularly which may have impacted their familiarity with privacy practices. The study recommended efforts to raise awareness and build a cybersecurity culture such as establishing "cyber champion" support groups.

Kularski and Martin (2022) conducted a systematic review of online privacy at HEIs which identified 41 relevant studies. They reported the increasing concern for privacy as HEIs shift towards online teaching. Few studies addressed the impact of teachers on students' privacy suggesting a need for research on teachers' roles in safeguarding student privacy during online interactions. Security also emerged as a major concern. The review concluded that OTEs need to protect the confidentiality and integrity of student data. This includes addressing issues such as unauthorized access to recorded sessions and the handling of personal information during online classes. The authors also noted that many HEIs lack adequate training for staff about online privacy and security and a gap in the research on online privacy in HE, as most studies focus on privacy beliefs and behaviours in social network sites. They noted that students' perceptions of sharing information in online teaching contexts remain underexplored.

Peng and Dutta (2022) investigated how personality traits and beliefs influenced Taiwanese HEI students' concerns about information privacy and their willingness to adopt e-learning since the pandemic. Personality traits such as agreeableness, conscientiousness, openness to experience, and neuroticism significantly influenced privacy concerns. These privacy concerns also mediated the relationship between belief in conspiracy theories about e-learning environments and e-learning adoption. Conspiracy theories included beliefs that OTEs or service providers might misuse or withhold information for self-serving purposes. Such beliefs negatively influenced students' intentions to adopt e-learning. Students with lower extraversion and higher neuroticism reported higher privacy concerns, further reducing their willingness to engage with e-learning.

2.2 Students and Teachers Attitudes of Webcam Use in Online Teaching

This section examines the attitudes of HEI students and teachers toward webcam use in online teaching. It reviews studies conducted both before and since the pandemic. Studies 5, 6, and 7 (Chapters 7, 8, and 9) focus on webcam use attitudes in HEIs in the UK and KSA.

Research has explored the role of webcam use in videoconferencing technologies and its potential impact on engagement and discussions in online teaching. Several studies have demonstrated the benefits of videoconferencing in educational contexts. Kidd and Stamatakis (2006) compared the performance and course evaluations of US pharmacy students who took a clinical pharmacokinetics course either in a traditional classroom or via interactive videoconferencing. Students in the classroom achieved slightly higher final grades (90.7% vs. 87.8%), while those in the videoconferencing group reported higher satisfaction with the course (evaluation scores of 4.73 vs. 4.58). These results suggest that videoconferencing did not negatively affect students' overall experience or perception of the course. Similarly, Giesbers et al. (2013) surveyed 110 Dutch HEI students and found that students who frequently participated in videoconferences using different technologies such as chat, audio, and webcam got high exam scores. Before the pandemic, Telles (2010) studied how webcam use in teletandem practice influences foreign language students. Teletandem is a method where two students—each fluent in a different language—are paired together so that each helps the other learn their native language using videoconferencing tools such as Skype. They take turns practising the language they are learning and giving feedback. HEI students with varying levels of proficiency in foreign languages, including German, English, French, Italian and Spanish, participated in the study. Students expanded their vocabulary, became more self-conscious about their appearance, and improved their ability to manage communication responses while using a webcam. Kozar (2016) interviewed 20 experienced online language teachers from the USA, Australia, Canada, the United Kingdom, and Ukraine and 20 adult students about their perspectives on and use of webcams in teacher-adult classes for foreign language teaching. Both teachers and students tended to use webcams at the beginning of sessions to establish rapport but discontinued their use after the first few weeks due to fatigue and feelings of awkwardness. These studies show how webcams can enhance language learning initially but point out the challenges of sustained use.

Since the pandemic, Yarmand et al. (2021) investigated the impact of students' reluctance to turn on webcams in online classrooms. Through interviews with seven US HE teachers and surveys of 102 students. The study found that most students avoided using webcams making it difficult for teachers to assess engagement and interpret non-verbal cues. Teachers described feeling

disconnected and “talking into a void,” while students reported discomfort with using webcams and a reduced sense of community. Although teachers used webcams as part of their teaching methods students’ choice not to use them created interaction gaps that negatively affected the overall teaching experience. Petchamé et al. (2022) conducted an online survey to explore the experiences of HEI Ramon students with webcam use in online classes. The study aimed to examine both the benefits and challenges of using webcams. Students reported several positive experiences, such as improved interaction, increased participation, and better focus during OTSs. However, some students expressed concerns about privacy and felt uncomfortable being seen at home. Others found webcams distracting, while some experienced anxiety and pressure from the expectation to keep their cameras on.

However, as well as the benefits of webcam use, privacy concerns have emerged. Gherheş et al. (2021) conducted a survey of Romanian HEI students since the pandemic and found that over half preferred to keep their webcams off during online classes due to anxiety, shyness, and concerns about exposing their private spaces to peers and teachers. Castelli & Sarvary (2021) found that nearly all US HEI students chose not to use their webcams citing concerns about appearance and privacy. Rajab & Soheib (2021) reported comparable findings among KSA HEI students, who kept their webcams off primarily due to privacy concerns. One issue was 'Zoom-bombing,' where unauthorized individuals disrupted sessions with inappropriate content. Students also were worried about their data being collected without consent and used for targeted advertising. These concerns along with the discomfort of overexposing their homes and appearance led to increased stress and anxiety. The authors recommended that students be informed about what data is collected and how it is used. Bedenlier et al. (2021) explored webcam use among German HEI students and found that privacy concerns, anxiety, and group cohesion influenced whether students chose to use their webcams during online classes.

In addition to privacy concerns, Hosszu et al. (2021) explored identity work, self-presentation, and well-being during the pandemic among Romanian school students. Many students believed they could participate and stay attentive in class without using their webcams. They also thought they could learn effectively without direct eye contact with their teachers. However, teachers reported feeling "alienated" and that they were teaching in front of a "black screen" with the absence of visual feedback. There were major privacy concerns raised by students who felt uneasy about sharing their physical location with their peers. Videoconferencing offered opportunities to enhance online teaching and bring it closer to in-person instruction with enhanced interaction, engagement, real-time feedback, a feeling of community, and the capacity to track student activities. But there were also problems mentioned, including fatigue, anxiety, bullying threats, privacy violations, and social and

digital disparities. The authors noted that cultural factors were crucial because they might influence how students perceive webcam rules. For instance, females who wear headscarves in public may encounter difficulties if they are asked to use webcams at home. Although some countries and schools have regulations mandating students to turn on their webcams, the research made clear that teachers need to be careful not to invade students' privacy.

2.3 The Move to Online Teaching in the UK and KSA during the COVID-19 Pandemic

The COVID-19 pandemic led HEIs in the UK and KSA to quickly shift to online teaching, and this has, in turn, prompted a considerable amount of research. Researchers have looked at a range of issues relating to the move to online teaching such as institutional responses to the pandemic and teachers' and students' attitudes towards using technology to teach.

2.3.1 Institutional Responses to the Pandemic

Bozkurt et al. (2020) examined the global educational response to the COVID-19 pandemic including in the UK and KSA. They found that many students in both countries lacked devices or internet access for online teaching. The study concludes that although implementations varied, both the UK and KSA faced similar challenges due to the sudden transition to online teaching especially around equity, psychological impacts, and the need for caring pedagogies. It also emphasized the need for measures to address concerns about surveillance, ethics, and data privacy in OTEs.

The sudden transition to online teaching resulted in major shifts in teaching practices, face-to-face lectures, seminars, practicals, and other teaching methods were replaced with online equivalents where possible or suspended if not possible. Examinations were conducted online or changed to different types of assessments which could be conducted online. HEIs used alternative methods for evaluating student performance. According to a review of 76 of the top 100 institutions in the Times Higher Education World University Rankings 2021 (Chan, 2023), five major topics developed from the pandemic changes to assessment and grading methods in HE: revising regulations for final degree awards; using a pass/fail grading system; relaxed progression policies; relaxed policies on extensions, deferrals, and exceptional circumstances; and mark adjustments. These adjustments were common amongst UK HEIs (University of York, 2019; University of Leicester, 2021; Assessment and Degree

Classification COVID-19 Impact, University of Hertfordshire, 2022; University College London, 2020). Similarly, KSA HEIs adjusted their assessment methods. According to Almossa and Alzahrani (2022), new directives were issued by KSA's Ministry of Education (MoE) covering reducing the weight of final exams; pass/fail grading; permitting course drops without penalty; diversified assessment methods; focus on assessment design; and technical and infrastructure challenges. Despite these differences, both UK and KSA HEIs shared common goals: ensuring that assessments remained fair, reducing student stress, and maintaining academic standards since the pandemic.

2.3.2 Students' and Teachers' Attitudes to Technology in Online Teaching Since the Pandemic

In the UK, VLEs had been used at HEIs to enhance teaching before the pandemic (Gwamba et al., 2017). One reason for this was the increasing number of students and the rising cost of living pressures, which meant that many students needed to study flexibly to accommodate part-time work. This "blended teaching" was common before the pandemic using multiple methods to deliver teaching by combining face-to-face interactions with online activities (Office for Students, 2021; The National Student Survey, 2022). However, the sudden move to online teaching due to the pandemic saw a rise in the use of this approach transforming it from a supplementary method into an essential means for delivering education.

Since the pandemic, researchers have investigated how UK HEI students and teachers have adapted to and perceived the use of technology in online teaching. Watermeyer et al. (2020) examined the difficulties experienced by UK HEIs during the COVID-19 lockdowns and the switch to online teaching. They found high levels of technical skill and strong access to technology among UK students, with many UK HEI teachers providing full online support for their students. Crick et al. (2021) focused on the impact of the pandemic on UK CS education. Their survey revealed significantly more positive attitudes toward online teaching compared to the pre-pandemic period. While the benefits of these changes were acknowledged—such as increased flexibility and emphasis on digital skills—participants also raised concerns about increased workload, the effectiveness of online pedagogy, and the impact on assessments.

. The National Student Survey (2021) provides further insights into UK student attitudes towards technology in online teaching during the pandemic. Overall, student satisfaction decreased and many students expressed challenges about the quality of online teaching and resources. The

survey also found decreased satisfaction with IT facilities and library resources. However, a majority of students agreed that their HEIs provided sufficient distance learning opportunities (Office for Students, 2021). Nicklin et al. (2022) examined the rapid transition to online teaching at the Department of Social Sciences at the University of Wolverhampton. Students' opinions of online teaching were mixed; some appreciated the flexibility, while others struggled with getting support. Feelings of uncertainty and lack of control negatively impacted student well-being though peer support networks provided emotional support. Teachers acknowledged facing challenges in modifying certain modules for online delivery, especially practical sessions. Despite these difficulties, teachers showed remarkable commitment to supporting students through regular assistance and empathetic communication.

In the KSA, the establishment of the National E-learning Centre (NELC) in 2005 marked an important milestone in the country's pursuit of governing and enhancing the adoption of VLE systems. Thorpe and Alsuwayed (2019) noted that KSA universities met the criteria of having adequate VLE infrastructure in place to support a transition to predominantly online teaching since the pandemic. In addition, according to Alqahtani and Rajkhan (2020), quality infrastructure for IT at KSA universities emerged as a critical factor in successfully transitioning to online teaching since the pandemic. They noted that the ability to make this transition smoothly varied among KSA universities due to differences in their readiness and maturity in using VLE systems before the pandemic.

Several studies in the KSA have investigated the attitudes of teachers and students toward online teaching since the pandemic. Alqahtani et al. (2022) conducted an online survey with 1117 teachers at various HEIs. To explore teachers' perceptions, attitudes, challenges, and satisfaction with online teaching during the pandemic. The results showed that many teachers had positive views about online teaching, with several feeling satisfied and believing they received enough training and resources. However, some challenges were reported, including internet issues, difficulty keeping students engaged, and balancing teaching with family responsibilities. Similarly, Alammary, Alshaikh, and Alhogail (2021) examined the impact of the pandemic on online teaching among KSA HEI teachers. They found that participants generally held positive opinions about online teaching. Many expressed positive sentiments toward online teaching. However, the research also noted that KSA students' engagement in online classes is often influenced by their prior exposure to traditional teaching methods which can limit active online participation. The perception of VLE systems among students varied based on factors such as gender, the academic level of the course, and the effectiveness of methodologies (Elumalai et al., 2020). Meccawy et al. (2021) investigated the pandemic experiences of teachers and students at King Abdulaziz University in KSA. They found that most students had a favorable experience with online teaching. Nearly three-quarters found it possible to attend online

courses and understand teachers' explanations and express overall satisfaction. However, teachers had a slightly negative opinion of online teaching, due to challenges such as course design and delivery, lack of face-to-face interaction, and the need for more training, difficulties with practical subjects and technical problems. This disparity shows that while students generally adapted well, teachers faced challenges that affected their attitudes to online teaching. Alhubaishy & Aljuhani (2021) investigated the attitudes of 25 teachers and students towards online technologies in various HEIs in KSA. They found that teachers' main challenges were fear of change, lack of experience, and privacy concerns. They also found that students' main challenges were learning performance, lack of access to resources, and fear of change.

Both the UK and KSA have shown resilience and adaptability in transitioning to online teaching since the pandemic with generally positive attitudes towards technology among students and teachers. However, differences in student satisfaction, focus on concerns, and institutional readiness demonstrate the need for tailored approaches to support online teaching effectively. The continuous improvements in infrastructure, training, and support systems are important to address the diverse needs and experiences of teachers and students in both contexts.

2.4 Definitions of Culture

Defining "culture" is difficult. Chiu (2013) argued that culture is hard to define as debates continue and there is no clear agreement on its meaning. However, these discussions show a growing understanding of cultural changes. This view suggests that culture is not fixed but is a complex and changing idea that can differ even within one society.

The term culture is used somewhat differently by anthropologists, sociologists, psychologists, and HCI researchers. Using a computer science-oriented view, Hofstede & Hofstede (2010) defined culture as "the collective programming of the mind that distinguishes the members of one group or category of people from others" (p.6). This programming or "software of the mind" refers to the learnt and transmitted patterns of human knowledge, beliefs, and behaviour. A more general definition of culture from anthropology is a "complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man (sic) as a member of society" (Tylor, 1871, as cited in Chen & Biswas, 2023). This definition shows the holistic nature of culture, including not just individual elements but the entire range of shared beliefs, values, and practices that are held by a culture or group.

Hofstede (2010) proposed a framework of dimensions to describe the cultural values of different countries. This is only one way of conceptualizing culture and is not without its problems (Joannides et al., 2012; Shaiq et al., 2011). Nevertheless, it is useful in comparing cultural differences and has been widely used (Gerlach & Eriksson, 2021). Hofstede's framework is predicated on the assumption that culture is a collection of learnt features that make certain behaviours or responses more likely in some cultures compared to others. Thus, variations between cultures can be characterised by observing variations in the fundamental values represented by their members. Although widely used, Hofstede's framework has been criticized for offering oversimplified and homogeneous explanations of cultural groupings. Critics argue that the model treats populations of countries as uniform entities, neglecting the rich diversity within countries that comprise various ethnic and cultural groups (Shaiq et al., 2011). This reductionist view can lead to inaccurate generalizations about cultural differences. In addition, the limited number of dimensions in Hofstede's framework is often seen as inadequate for capturing the complexity and nuances of cultural variations (Joannides et al., 2012).

Hofstede's framework includes six dimensions of cultural values (Hofstede, 2010; He & Zhang, 2024):

1. Power Distance: reflects the extent to which a culture accepts that power is distributed unequally among its members.
2. Individualism: measures the degree to which individuals are expected to look after themselves and their immediate families versus being integrated into groups that protect them in exchange for loyalty.
3. Motivation towards Achievement and Success: represents the values a society prioritizes, such as achievement and assertiveness versus cooperation and quality of life.
4. Uncertainty Avoidance: reflects how a society deals with ambiguity and unknown situations, reflecting the level of comfort with uncertainty and risk.
5. Long-term Orientation: reflects a society's focus on long-term planning and perseverance versus short-term normative orientation and immediate results.
6. Indulgence: measures a society's allowance for free gratification of basic human desires versus the regulation and restraint of such gratification.

According to my analysis of Saudi and British cultures using Hofstede's dimensions (see Figure 2.1 below), the two cultures have differences in all six cultural values. It is especially the differences in Power Distance, Individualism, and Uncertainty Avoidance which are important in this programme of

research since these differences can be related also to issues of privacy and security in the other research.



Figure 2.1 KSA and the UK on Hofstede's six dimensions (Source: <https://www.hofstede-insights.com/country-comparison-tool?countries=saudi+arabia%2Cunited+kingdom>).

2.5 Cultural Attitudes in the UK and KSA

In the KSA, religion holds great cultural significance, as it is the birthplace of Islam and home to the sacred cities of Makkah and Medina. Islamic traditions and values shape the culture of the KSA strongly influencing the values, beliefs, and behaviour of Saudis (Albugami & Ahmed, 2016; Johnson, 2010; Rice, 2004). This influence is evident in various aspects of KSA culture, the use of ICT (Albugami & Ahmed, 2016), business practices (Rice, 2004), human resources practices (Siddique et al., 2016) and tourism (Johnson, 2010). These religious values include the importance of the extended family, gender segregation, and respect for those in positions of authority. For example, the family structure in KSA is the cornerstone of social organization due to the religious significance placed on it (Alwani, 2011). In contrast, the Western world, including the UK, emphasises the individual as the primary social unit (Lewis, 2019). Research consistently shows that Muslims place a high value on family relationships and collective responsibilities (Alavi & Azizi, 2021; Alghafli et al., 2014; Dhami & Sheikh, 2000). This is due to the importance of Islamic teaching which emphasises the importance of the family unit and its roles and responsibilities.

The culture of the KSA is also marked by gender segregation which has an impact on many aspects of daily life, including education (Al-hariri et al., 1987). In line with local Islamic law, the KSA creates gender-segregated HEI environments with separate buildings and facilities for male and female students (Alshalawi, 2020). Typically, there are restrictions on interactions between unrelated males and females. However, limited exceptions may exist in specific situations such as medical institutions or certain professional environments where mixed-gender interactions are unavoidable (Alebaikan & Troudi, 2010). In HEIs, male and female students generally do not attend the same classes or use the same facilities. Interactions between male and female students are usually restricted to prevent any socializing that is not directly related to academic purposes. In HEIs, there are some instances where male and female students might participate in online classes together but physical interaction remains limited.

Regarding teachers, male teachers primarily teach male students and female teachers teach female students. In certain circumstances, especially in HEIs or specialized subjects for which there may be a limited number of qualified teachers, limited exceptions may occur. For example, male teachers might deliver a lecture to female students through videoconferencing or from a separate room. Conversely, a female professor might teach male students under similar conditions. In contrast, the UK does not have any gender segregation in HEIs.

Muslims are exhorted to submit to Allah (God), the Prophet Muhammad (peace be upon him), and the authorities (Al-Qur'an 7:158). As stated in the Qur'an, Islam's teachings emphasise the necessity of obedience to those in positions of authority. This principle of obedience applies to rulers, guardians, and teachers. Students are expected to demonstrate respect and obedience to their teachers. This includes adhering to showing respect for the teacher's expertise and direction.

In KSA, respect for teachers extends beyond mere compliance. It is viewed as a fundamental value that contributes to societal cohesion which fosters a sense of security and tranquillity. Also, it serves as a means of obtaining spiritual rewards from Allah. Respecting teachers is regarded as a virtue that not only facilitates personal growth but also enhances the well-being of the community. Due to the high regard for teachers stemming from these religious values, the relationship between students and teachers is often formal in all settings. Most students feel awkward asking questions of their teachers, both in and out of class (Allamnakhrah, 2013). In contrast, the approach to respecting authority, especially in HEIs, differs in the UK. Unlike in KSA, where respect for authority is deeply rooted in religious teachings, attitudes in the UK are shaped more by Western cultural values and educational principles. Respect for authority in the UK is not directly tied to religious doctrine (Janmaat, 2018). The UK is fundamentally a secular society, where cultural and religious beliefs vary widely across its diverse population. While respect for authority is upheld to some extent, it is not as deeply ingrained or

universally emphasized as it is in KSA, where Islamic teachings strongly influence societal values. UK students being more likely to ask questions and debate with teachers.

Hofstede's cultural dimensions—Power Distance, Individualism, and Uncertainty Avoidance—show key cultural differences between the KSA and the UK that shape respect, authority, and interaction in HEIs. In the KSA, high Power Distance, collectivist values, and high Uncertainty Avoidance encourage formal and respectful teacher-student relationships. In contrast, the UK's lower Power Distance, individualistic values, and low Uncertainty Avoidance foster a more egalitarian and open educational environment.

2.6 Cultural Attitudes Toward Security and Privacy in the UK and KSA

The UK and KSA exhibit distinct attitudes toward security and privacy, shaped by their cultures and legislation (Almutairi, 2019; DataGuidance, 2023; GDPR, 2016; Fleming et al. 2021). In KSA, privacy is not merely an individual right; it is deeply intertwined with family honour and community reputation. Islamic teachings emphasize the importance of modesty and privacy, especially in interactions between genders. For instance, the Quran stresses the necessity of maintaining boundaries between men and women to prevent temptation and preserve social order (Adamson, 2007). This religious framework fosters a cultural norm where the family's reputation is collectively upheld, and behaviours that could bring shame or dishonour to the family are avoided (Almutairi, 2019).

The architecture and social practices in KSA reflect this communal understanding of privacy. Homes are often designed with high walls and separate entrances for men and women, ensuring that interactions are controlled and private (AlKhateeb et al., 2014). Public spaces, such as educational institutions and government offices, typically feature gender-segregated facilities to maintain these cultural norms (Abokhodair & Vieweg, 2016). This distinction shows the communal responsibility to uphold privacy and modesty, as interactions between genders are regulated to protect family honour (Al-Rasheed, 2013; Alhazmi & Nyland, 2013). In contrast, Western cultures tend to individualism, where privacy is viewed primarily as an individual right. The Western perspective prioritizes personal autonomy and self-determination, often advocating for limited government intervention in private affairs (Lewis, 2019). This individualistic approach allows for more open interactions between genders and a broader interpretation of privacy that focuses on personal choice rather than communal obligation. These cultural distinctions lead to differing attitudes towards online privacy and security.

While numerous studies have explored general cultural values related to online privacy and security in both Middle Eastern countries, including KSA, and Western countries, including the UK

(Fleming et al. 2021; Rashidi et al., 2016; Trepte et al., 2017) there is a noticeable gap in the literature when it comes to direct comparisons between KSA and the UK. Fleming et al. (2021) conducted an online survey in the United States, India, and the UK to examine how personal data value, culture, and self-construal affect online privacy concerns. The results showed that in individualistic cultures, like the UK and the United States, valuing personal data did not significantly influence privacy concerns. However, in collectivist cultures—such as India—where group harmony, social relationships, and community obligations are prioritized over individual autonomy, people were more careful with their privacy when they valued their data. Some participants in the UK who identified as more connected to others (similar to those in collectivist cultures) were also more cautious about their privacy when they valued their data. The study concluded that culture and self-construal influence how people manage their online privacy.

In another cross-cultural study of the privacy and use of social media tools, Rashidi et al. (2016) conducted an online survey of KSA WhatsApp users to examine their privacy-related behaviours and opinions. Saudi users demonstrated awareness and active use of at least eight different privacy settings available on the platform. While some users were content with default settings, others expressed a desire for more granular control over their profile information visibility especially the ability to restrict access to specific contacts. An interesting finding was that most users preferred to have control over their inclusion in group chats, wanting to be asked for permission before being added to public social groups. The results found a spectrum of privacy preferences among Saudi WhatsApp users, ranging from those satisfied with default settings to those seeking more detailed customization options. Trepte et al. (2017) conducted an online survey with 1,550 participants from Germany, the Netherlands, the UK, the US, and China to examine how cultural values especially Individualism/Collectivism and Uncertainty Avoidance influence privacy concerns and social gratifications. Social gratifications refer to the social benefits people get from online interactions such as forming relationships, receiving support, and maintaining social connections. The study found that participants from Collectivist cultures placed higher importance on social gratifications while also showing greater emphasis on privacy risks. This is likely due to their focus on protecting the well-being of their social group. In contrast, participants from Individualist cultures showed less concern for social gratifications and privacy risks. In addition, participants from cultures with high Uncertainty Avoidance gave more importance to privacy protection but were less motivated by social gratifications. The study concluded that culture Individualism/Collectivism and Uncertainty Avoidance significantly influence privacy attitudes on social network sites.

In conclusion, cultural values play an important role in shaping privacy attitudes and behaviours online. In Western countries like the UK, where individualism is common, privacy is viewed

as a personal right with a strong focus on individual control and consent. In contrast, in Arab countries like KSA, where collectivism is more common, privacy is intertwined with family honour and community reputation, influenced by Islamic teachings and cultural norms.

In relation to legislation, in the UK the General Data Protection Regulation (GDPR, 2016) is a European Union law and was maintained after the UK left the European Union. It places greater obligations on how organisations, including universities, handle personal data, than the previous legislation. The GDPR protects a wide range of personal data, including basic personal identification information (name, address, email), indirectly identifying information (IP address, online identifiers), and special categories of sensitive data such as race, health information, and sexual orientation. Furthermore, the UK recently introduced the Online Safety Act (2023) which complements GDPR by placing specific duties on social media platforms and other online services to tackle harmful content and protect users, especially children.

When I commenced my research in April 2021, KSA lacked explicit data protection legislation except for laws grounded in the principles of governance and sector-specific legislative instruments (Kingdom of Saudi Arabia, Royal Order, 1992). These laws are not designed to protect individuals' online privacy (Aleisa et al., 2020; Alsulaiman & Alrodhan, 2014). However, KSA's first data protection law was published in the Official Gazette on September 24, 2021 (Saudi Arabia Personal Data Protection Law, 2021), establishing the country's first data protection law. It took effect on September 14, 2023, with executive rules to supplement the law to be issued. The Personal Data Protection Law (PDPL) safeguards individuals' personal data, including identification details, addresses, contact numbers, photographs, and video recordings. It applies to all personal data processing by businesses or public entities within KSA and extends to the processing of Saudi residents' data by entities outside the country.

Both the GDPR and PDPL frameworks introduce data protection principles for organizations to follow. They confer new data rights on data owners, such as the right to be informed about how personal data are processed, obtain access to personal data, and the right to request correction and deletion of personal data. While the foundational aspects are similar, there are notable differences between the two frameworks. The KSA PDPL varies from the UK GDPR in terms of its application, geographical reach, and specific requirements. For example, the PDPL has a broader territorial scope than the GDPR, applying to any entity located outside of KSA processing the personal data of individuals in KSA (DataGuidance, 2023). This means that organizations outside KSA must comply with the PDPL if they handle the personal data of KSA residents, thereby extending the law's reach beyond national borders. In contrast, the UK GDPR primarily governs the processing of personal data within

the UK and by UK entities, although it also includes provisions for data transfers to and from countries outside the UK, contingent on adequate data protection measures being in place.

These pieces of national legislation apply to data about students and teachers collected by HEIs in the UK and KSA, respectively. For example, in the UK, the Russell Group of Universities, a network of 24 leading research-intensive universities established in 1994, provides policies on how universities should handle personal data following GDPR. While in KSA, the Ministry of Education outlines a similar policy about the use of personal data using the PDPL (Ministry of Education, 2020). However, in UK and KSA there is a lack of clear policies in relation to online teaching, leaving important questions unanswered. Precautions about the eligibility of attendees in online sessions, the requirement for webcams to be turned on during teaching sessions, the extent of recording of sessions (video-only or including chat discussions), and the privacy and security measures for informal digital channels (e.g., Slack or WhatsApp) are not well-defined. These issues emphasize the need for privacy and security policies in HEIs.

2.7 Higher Education Systems in the UK and KSA

This section explores the cultural influences on the HE systems of KSA and the UK, illustrating the distinctive characteristics that define each nation's approach to HE.

In the UK, HE is not governed by a single unified system. Instead, HE is a matter for the devolved governments, with England, Northern Ireland, Scotland, and Wales each having its own distinct HE policies and approaches to managing and overseeing universities and other higher education institutions. While universities across the UK are autonomous, self-governing institutions, they operate within the wider policy context set at the devolved national level. Each country is responsible for setting policy and the overall regulatory framework for its own HE sectors, with different bodies responsible for management in each nation. For example, England has the Office for Students (OfS), Wales has the Higher Education Funding Council, Scotland has the Scottish Funding Council, and Northern Ireland has the Higher Education Division of the Department for the Economy.

The OfS specifically covers HE in England and serves as the overseer of education dedicated to ensuring positive educational outcomes for students from diverse backgrounds. To fulfil its mission, the OfS relies on two instruments: The Register, where HE institutions must register to confer degrees, use the title of university, sponsor students, or offer access to student loans. Failure to meet requirements may result in penalties such as fines or deregistration (Office for Students, 2024). There is also the Teaching Excellence Framework (TEF), a system that evaluates institutions based on student

experiences and outcomes. The OfS also plays a role in safeguarding freedom of speech on campuses as mandated by the HE (UK Parliament, 2023)

External examiners play an important role in upholding standards across various HEIs in the UK. They assess whether academic standards and student achievements at one institution are consistent with others to facilitate benchmarking. In addition, they provide guidance on assessment regulations to ensure evaluation processes. External examiners also evaluate curriculum relevance and alignment with industry standards to promote practices in HE. Their autonomy offers evaluations of criteria, evaluation procedures and programme frameworks. Through their involvement in tasks, external assessors guarantee uniformity and excellence throughout the sector contributing specially to maintaining educational standards in HE in the UK (UK Standing Committee for Quality Assessment, 2024).

Conversely, KSA maintains a highly centralized educational system overseen by the MoE which gives it important control over many aspects of HE in the country, including curriculum development, textbook selection, education policies, teacher recruitment, funding, and oversight of both public and private HE. The MoE also plays a crucial role in governing HE, determining curricula, admissions criteria, and faculty appointments. While this centralized approach allows for alignment with national goals and policies, it is worth noting that there have been some recent efforts to introduce limited decentralization in line with Vision 2030. Vision 2030 is KSA's strategic plan aimed at reducing dependence on oil, diversifying the economy, and developing public service sectors, including education. One of the initiatives of Vision 2030 is granting fiscal and administrative autonomy to certain public universities to foster innovation and improve educational outcomes. Despite these initiatives, the overall HE system in KSA remains highly centralized under the MoE's authority (OECD, 2020).

Cultural perspectives on the value of HE in the UK have evolved over time, reflecting changing societal expectations and institutional roles. Traditionally, UK HE has prioritized intellectual growth, personal development, and individualism (Universities UK, 2024). However, Woodall et al. (2014) noted a growing commercialization of UK HE, which has raised students' expectations and altered the educational landscape. This shift has led to changing institutional roles, with universities focusing more on research, innovation, and community engagement. Soysal & Baltaru (2021) found the need for UK HEIs to adapt to these changes, outlining three key institutional logics: producing knowledge, creating economic value, and enhancing global representation. This framework emphasises that HEIs must not only impart knowledge but also contribute to economic and societal development. In response to these changes, UK HEIs have developed specific graduate qualities. Wong et al. (2022) identified four overarching discourses characterizing these qualities: self-awareness and lifelong learning;

employability and professional development; global citizenship and engagement; and academic and research literacy. These attributes aim to prepare students for a rapidly changing global workforce and society.

While the growth of HE in the UK has increased accessibility to a wider range of students, Welch (2021) noted that class makeup still favours professional and administrative groups indicating persistent obstacles to true educational equity. This tension between widening participation and lingering inequalities shows the complex challenges facing UK HE as it strives to balance traditional academic values with market demands and societal expectations.

The KSA HE system is deeply rooted in Islamic values, emphasizing family, society, and nation (Algraini, 2021; Pavan, 2016; Smith & Abouammoh, 2013). KSA young people's educational ambitions have grown due to the rapid expansion of HE (Sim, 2016). However, challenges include transitioning to a knowledge society (Al-Shayea, 2015) and pursuing global recognition (Alharbi, 2016).

The HE philosophies of the UK and KSA show major contrasts in their teaching approaches to critical thinking and pedagogy. The UK system is more about asking students to question, analyze and evaluate information (Hammersley-Fletcher & Hanley, 2016; Starkey, 2019). This helps create an environment that promotes critical thinking, individualism, and imaginative expression by embracing different ideas. Thus, this approach is compatible with student-centered philosophical positions which show individual autonomy as well as personal development (Starkey, 2019).

Conversely, the KSA HE system has historically leaned towards a traditional, teacher-centered philosophy (Alghamdi, 2015; Gulnaz et al., 2015; Klatt et al., 2020). This approach relies more on teacher-led instruction, often prioritizing memorization over critical analysis and application of knowledge (Gulnaz et al., 2015). Students are accustomed to memorising facts by rote, and they are obligated to provide accurate, textbook-style responses on written exams (Al-Seghayer, 2021). Most of the time, students' work is dependent on the teacher's instructions, and learning is primarily directed by the teacher. This can lead to passivity and limited questioning, reinforcing reliance on authority.

Hofstede's cultural values dimensions can be used to help understand cultural views on HE in KSA and the UK. In the UK, the system is decentralised. This reflects Hofstede's low Power Distance dimension, where people prefer less control from authorities and more freedom to make decisions. In contrast, KSA's HE system is a highly centralized system overseen by the Ministry of Education. This reflects Hofstede's high-Power Distance dimension, where decisions are mostly made by higher authorities.

The UK's diverse and decentralized HE is characterized by academic freedom and the pursuit of knowledge, which agrees with a more individualistic cultural orientation. Conversely, KSA's

emphasis on collective understanding and adherence to standards reflects a more collectivist approach that emphasises community and group cohesion.

2.8 The Effects of Culture on Attitudes to Online Teaching

The effect of cultural differences on education in general has been the focus of a lot of research interest (e.g. Gay, 2000; Leask & Carroll, 2011). More recently, attention has been paid to cultural differences in online teaching (Goodfellow & Hewling, 2005; Gu et al. 2017). Gay (2000) argued that it is essential to recognize the cultural experiences and backgrounds of students to effectively teach and engage them in learning. Goodfellow & Hewling (2005) proposed two aspects that describe the influence of cultural issues in online education. Firstly, “culture as content” refers to how OTEs can facilitate the exchange and sharing of cultural knowledge and artefacts, such as literature, music, and visual arts. This type of online cultural exchange can be valuable for promoting cultural understanding and tolerance. Secondly, “culture as context” refers to the ways in which the cultural context of online students influences their teaching experiences. For example, cultural differences in teaching styles, communication patterns, and attitudes towards technology can affect the ways in which students participate in OTEs.

Culture has been widely investigated in education in many different ways, and the following studies show the various approaches taken to understand the impact of culture on online teaching. Gu et al. (2017) examined the relationship between thinking styles and emerging roles in online teaching in a cross-cultural context. The study assumed that distinct cultures may have separate ways of thinking and approaching tasks, which could impact how individuals participate and contribute to OTEs. The study compared Chinese and American graduate students. There were significant differences in thinking styles between the two groups. In particular, the Chinese participants were found to have a more holistic and interdependent thinking style, while the American participants were found to have a more analytical and independent thinking style. These variations in thinking styles have implications for online teaching. The holistic and interdependent thinking style observed in the Chinese participants may foster collaborative and interconnected approaches to learning within online environments. On the other hand, the analytical and independent thinking style seen in American participants may influence a more individually focused and systematically structured approach to online teaching. Recognizing and understanding these cultural nuances in thinking styles is crucial for designing effective and inclusive online teaching experiences that accommodate diverse cognitive approaches.

Gómez-Rey et al. (2016) also examined the impact of cultural differences and students' experiences and satisfaction in an online teaching environment in four different countries: Spain, the USA, China,

and Mexico. Hofstede's cultural dimensions of Individualism-Collectivism, Power Distance, and Uncertainty Avoidance had a significant impact on students' experiences and satisfaction in OTEs. Students from countries with a high level of Uncertainty Avoidance (such as the USA) were comfortable with an organised process of learning, while students from countries with lower levels of Uncertainty Avoidance such as Mexico and Spain were comfortable with an open-minded education system. Students from Spain and the USA were identified as having the highest levels of autonomy, indicating strong motivation and self-confidence. One student from Spain stated, "I feel highly motivated to take charge of my learning, and the online environment enhances my self-efficacy". The authors noted that teachers should be observant of students' cultural differences to improve their online teaching experiences.

2.9 Conclusions

The literature review explored definitions of privacy, security, and trust proposed by different authors. Previous research has also established categories for different types of privacy, security, and trust. Building on these categories, this research applied and contextualized them to the specific setting of online teaching. Previous studies have mainly looked at general privacy and security concerns, such as internet use or HE in general, but they have not focused on the particular issues in online teaching. Privacy concerns are raised by webcam use and recording online teaching sessions; Security concerns are raised by the possibility of unauthorized people joining or interrupting online classes. All these issues raise concerns about students' trust in online teaching.

Existing research on privacy and security concerns in online teaching is limited to two key studies: Kim (2021) in South Korea and Peng and Dutta (2022) in Taiwan. These studies addressed critical issues, such as the role of privacy concerns in student participation and the impact of psychological factors on e-learning adoption. However, their findings lack generalizability to other cultural and institutional contexts. This shows an important gap in understanding how privacy concerns are perceived and addressed in diverse educational settings.

In addition, there are gaps in research on trust in online teaching. Existing studies primarily focus on general educational contexts (e.g., Cavanagh et al., 2018) or trust in technology and institutions (e.g., Ejdy, 2018). I could not find any research on how privacy and security concerns influence trust and how this, in turn, impacts student and teacher participation in online teaching.

While most studies addressing privacy, security, and trust have been conducted in Western contexts, there is limited research focusing on the UK. For instance, Buchanan et al. (2007) explored general online privacy concerns in the UK but did not specifically address privacy issues in relation to

online teaching. Moreover, there is a gap in research examining these issues cross-culturally. This lack of comparative studies emphasises the importance of investigating privacy, security, and trust in online teaching in the UK and the KSA to understand cultural differences better.

Research shows that there are various reasons for students not using webcams, ranging from fatigue (Kozar, 2016), privacy concerns (Rajab & Soheib, 2021), anxiety, shyness (Gherheş et al., 2021) to appearance (Castelli & Sarvary, 2021). Before the pandemic, research on this topic focused primarily on language acquisition (e.g., Telles, 2010; Kozar, 2016), improving student academic performance (Giesbers et al., 2013; Kidd & Stamatakis, 2006). Since the pandemic, studies shifted to explore why students refrained from using webcams in online sessions, citing factors such as privacy, anxiety, shyness and appearance (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Gherheş et al., 2021; Rajab & Soheib, 2021).

However, it appears that no previous study has specifically examined how privacy and security concerns, as well as trust, influence students' use of webcams during online teaching. Although there has been research on students' attitudes toward webcam use, the role of institutional policies and trust in online systems remains unexplored. While studies such as Yarmand et al. (2021) have examined US HEI teachers' perceptions of live online classes, and Hosszu et al. (2021) looked at primary and secondary teachers in Romania, there is still a lack of research focusing on UK and KSA HEI teachers' attitudes towards webcam use in online teaching. While privacy concerns, social norms, and cultural factors such as gender roles and modesty may impact webcam use globally, their specific influence on students and teachers in the UK and KSA remains unresearched.

This literature review also explored different definitions of culture and proposed one to be used in this thesis. The review compared Saudi and British cultures using Hofstede's framework, revealing differences in all six cultural dimensions. Especially, differences in Power Distance, Individualism, and Uncertainty Avoidance are important in this programme of research, as they relate to issues of privacy and security. The review also showed cultural perspectives within the HE systems of the UK and KSA shedding light on the unique characteristics that define each nation's educational approach.

In summary, the review revealed gaps in understanding the specific concerns of both students and teachers in different cultural contexts. This programme of research seeks to address these gaps by investigating privacy, security and trust in online teaching, contributing to a more comprehensive understanding of the factors that influence attitudes and behaviours in HEIs in the UK and KSA.

Chapter 3: Study 1: Privacy and Security in Online Teaching: Experiences and Concerns of Students in UK Higher Education Institutions Before and Since the Pandemic

3.1 Introduction

As discussed in the literature review (Section 2.3.2), some previous research has examined UK HEI students' experiences with technology in online teaching since the pandemic (Watermeyer et al., 2020; National Student Survey, 2021; Nicklin et al., 2022). However, there is a gap in research specifically addressing UK HEI students' privacy and security concerns about online teaching.

This chapter addresses this gap by investigating the experiences and concerns of privacy and security of UK HEI students before and since the pandemic. It examined students' experiences with personal and institution-supplied devices, as well as their experiences with online technologies such as chat and videoconferencing.

The study investigated the following research questions:

RQ1: How did UK HEI students experience the move to online teaching due to the pandemic?

RQ2: How did UK HEI students experience the devices and technologies used in online teaching before and since the pandemic?

RQ3: What are UK HEI students' concerns about privacy and security in online teaching?

3.2 Method

3.2.1 Design

The study used an online questionnaire and sampled from British HEI students. I chose to concentrate particularly on British students (i.e., those studying at a UK HEI and who are British), as HE practices can vary between countries. In addition, students from different cultures may well have different attitudes to online privacy and security in general and specifically about their education. Also, the study concentrated on UK HEI students who had been studying at a UK HEI before the pandemic started (i.e., started studying in the 2019 – 2020 academic year or earlier) to understand the impact of the pandemic on their academic journey. I used the term "since the pandemic" to denote the period

starting from the onset of the pandemic (i.e. March 2020) and continuing until the questionnaire was conducted in December 2021.

An open-ended question asked what “online privacy and security” meant to participants to gain an initial understanding of what it meant to students. A definition of what I intended by "online privacy and security" was then provided: “By ‘online security and privacy’ in this survey I mean that a person’s data, including their identity, is not accessible to anyone other than themselves and others who they have authorised, and that their computing devices work properly and are free from unauthorized interference.” Students’ understanding of online privacy and security was of interest in itself, but I was also able to ensure that participants understood what was asked about in subsequent questions.

The questionnaire covered various aspects of students' experiences with online teaching and their use of technologies and devices before and since the pandemic, as well as their concerns about privacy and security issues in online teaching.

The questionnaire used a combination of rating items, multiple-choice questions, and open-ended questions to gather data. Rating items and multiple-choice questions were mandatory, while open-ended questions were optional. This was because the open-ended questions asked participants to elaborate on what their concerns were, participants who did not have any concerns were not expected to reply. Also, I did not want the questionnaire to be too long and onerous to complete.

The questionnaire also included a number of attentions checks to ensure participants read the questions carefully and avoided random responses (see section 3.2.3). The study received ethical approval with reference number (Almekhled20211202) from the Physical Sciences Ethics Committee of the University of York.

3.2.2 Participants

Participants were recruited via the Prolific recruitment site (prolific.com). 75 students responded, but data from four were discarded because they did not meet the inclusion criterion of having started studying at a UK HEI before the pandemic. However, no one failed the attention check questions. Therefore, the sample consisted of 71 participants. Demographic information for the participants is shown in Table 3.1.

Table 3.1 Demographic information for the participants in Study 1

Age	
Range	18 – 67 years
Mean	25.6
Standard deviation	8.9
Gender	
Men	25 (35.2%)
Women	45 (63.4%)
Prefer not to say	1 (1.4%)
Degree level	
Bachelor	56 (78.9%)
Masters	10 (14.1%)
PhD	5 (7.0%)
Academic year started	
2019 - 2020	47 (66.2%)
2018 - 2019	19 (26.8%)
2017 - 2018	1 (1.4%)
Earlier	4 (5.6%)
Subject being studied	
Arts/Humanities	13 (18.3%)
Administrative and Financial sciences	5 (7.0%)
CS and Engineering	14 (19.7%)
Medical Science and Health Science	15 (21.1%)
Social sciences (e.g. psychology, sociology)	7 (9.9%)
	17 (23.9%)

The age range of the participants was surprisingly wide (18 - 67 years), but 50 participants (70.4%) were 25 years or younger, and 60 (84.5%) were 30 or younger. The sample was somewhat skewed toward women (63.4% women), perhaps due to the tendency of women to volunteer more frequently for research (Rosnow & Rosenthal, 2012). Participants were studying at 46 different UK HEIs, representing every type of HEI in the UK from elite universities (Oxford and Cambridge) to newer HEIs. No one HEI had more than three participants. Most participants were studying at HEIs in England (61, 85.9%), but some in Scotland (6, 8.5%), Wales (3, 4.2%) and Northern Ireland (1, 1.4%).

The distribution of degree levels was quite close to the overall UK HEI population: statistics from the Higher Education Statistics Agency (HESA, 2022a) show that 73.0% of students are enrolled in Bachelor level degrees, 22.9% in master's and 4.1% in PhD or other research degrees. On the other hand, the distribution of participants' major subjects did not closely match the overall UK HE population (see Table 3.2). There was an over-representation of participants studying arts and humanities, physical sciences, and social sciences. Conversely, there was an under-representation of participants studying administrative and financial sciences and medical and health sciences. However, the percentage studying CS and engineering is reasonably similar to HE overall (HESA, 2022b).

Table 3.2 Comparison of major subjects of study for the study 1 participants vs. UK HE population (HESA, 2022b)

Major Subject	Study 1 N (%)	UK HE Population N (%)
Arts/Humanities	13 (18.3%)	71,285 (5.4%)
Administrative and Financial sciences	5 (7.0%)	245,560 (18.6%)
CS and Engineering	14 (19.7%)	316,845 (24.1%)
Medical Sciences and Health Science	15 (21.1%)	562,405 (42.7%)
Physical sciences (e.g., physics, chemistry)	7 (9.9%)	20,475 (1.6%)
Social sciences (e.g., psychology, sociology)	17 (23.9%)	100,265 (7.6%)
Total	71	1,316,735

3.2.3 Online Questionnaire

The online questionnaire was developed and deployed in the Qualtrics survey software (www.qualtrics.com). The full questionnaire can be found in Appendix B1.

The questionnaire started with an information screen outlining the study's objectives, and the processing and storage procedures for participants' responses. Participants were then asked to explicitly indicate their consent to participate.

The questionnaire consisted of the following five sections:

Section 1. Participant's institution: multiple choice questions asked where the participant was institution studying, and when they started studying in HE. Multiple-choice questions asked for the qualification they were studying for degree level (Bachelor, Masters, or Ph.D.), main subject area of study, (options: Arts/Humanities, Administrative and Financial Sciences, CS and Engineering, Medical Sciences and Health Science, Physical Sciences (e.g., physics, chemistry), and Social Sciences (e.g., psychology, sociology)). It also asked what mode³ of teaching was used at their HEI before the pandemic (options: face-to-face, blended or online) and whether teaching moved partly or fully online in

³ Mode of online teaching refers to the overall format of delivery, such as face-to-face, blended, or fully online.

response to the pandemic. An open-ended question asked about participants' experiences of online teaching since the pandemic.

Section 2. Teaching experience before and since the pandemic: an open-ended question asked what "online privacy and security" meant to participants (this was the only compulsory open-ended question). A definition of online privacy and security was then provided: a person's data, including their identity, is not accessible to anyone other than themselves and others who they have authorized and their computing devices work properly and are free from unauthorized interference (see Section 2.1.1). Participants rated their experiences with different types of online teaching sessions (lectures, small group discussions/seminars, lab sessions, one-to-one sessions with teachers, and fieldwork), both before and since the pandemic. Participants also rated their typical level of participation in these types of teaching (asking questions, contributing to discussions, and interacting with the teacher or other students) during the same periods. Participants rated whether their level of participation was lower if they knew the session was being recorded for later viewing, a follow-up open-ended question asked participants to explain how recording affected their participation.

Participants rated their experiences with submitting work online (for feedback only, formal assessments, and online exams) before and since the pandemic. A follow-up open-ended question asked for details about any specific procedures implemented to ensure the privacy and security of online submissions. Finally, an open-ended question asked about the main challenges they faced in online teaching since the pandemic.

Section 3. Devices and technology used in online teaching before and since the pandemic: Participants rated their experiences with both institution-supplied and personal devices (e.g., desktop computers, laptops, tablets, and smartphones), as well as their experience with videoconferencing technologies, both before and since the pandemic. A follow-up open-ended question asked about the main challenges participants faced in using videoconferencing technologies since the pandemic. Multiple-choice questions asked whether participants used online chat technologies (both synchronous and asynchronous), before and since the pandemic. A follow-up open-ended question asked about the main challenges participants faced in using chat technologies since the pandemic.

Participants rated their webcam use during different types of OTSs⁴ (online lectures, small group sessions/seminars, lab sessions, online study sessions with other students, and one-to-one sessions with their teachers). They rated their perception of their teachers' webcam use. A follow-up open-ended question asked about views on webcam use by participants and their teachers., and

⁴ Type of OTSs refers to specific online teaching sessions, such as lectures, small group discussions, or lab sessions.

another open-ended question asked for the main challenges faced when using these technologies since the pandemic.

Section 4. Privacy and security concerns in online teaching: participants rated their concerns about online privacy and security in relation to videoconferencing and chat technologies in each of the following situations:

- Using videoconferencing technologies in teaching sessions
- Using online chat technologies in teaching sessions
- Using videoconferencing technologies in studying with other students
- Using online chat technologies in studying with other students

A follow-up open-ended question asked for any additional concern's participants had about online privacy and security related to the use of videoconferencing and chat technologies.

Participants rated their level of concern about privacy and security when using different devices for online teaching both institutional and personal devices with a follow-up open-ended question about concerns about these issues. Multiple-choice questions asked participants whether their institution had policies on online privacy and security and whether it provided training to students on these topics. For those who answered "Yes," a follow-up open-ended question asked participants to describe their institution's privacy and security policies in more detail. Another follow-up open-ended question for details of any training their institution provides.

Participants rated their level of concern for specific online teaching situations in relation to privacy and security:

- Requiring participants to turn on webcams during online exams for real-time monitoring.
- Recording themselves during online exams for later review.
- Other students making recordings or taking screenshots without permission.
- Using students' work as examples without their consent.
- Other students making inappropriate comments.
- Online lectures or seminars being recorded without their knowledge.
- Unauthorized people attending or interrupting teaching sessions.
- Experiencing harassment by other students.
- The presence or absence of webcam use by teachers and other students during sessions.

These situations were developed from a literature review and brainstorming with several HEI teachers about their experiences since the pandemic. A list of situations was used to avoid the limitations of an open-ended question that might not elicit much specific information. A follow-up open-ended question asked for concerns about these situations.

Section 5. Demographics: asked participants' age and gender.

Two attention-check questions (Curran & Hauser, 2019) were included at different locations in the questionnaire. The question in both cases was: “Studies indicate that over 50% of people do not read questions carefully”. One question asked, “Please pick 'two' if you are reading this paragraph.” The other question asked, “Please replace 'two' with 'three'.”

A pilot study was conducted with five CS undergraduate students at the University of York to assess the clarity of the questions and the time required to complete the questionnaire. Subsequently, some minor adjustments were made, including refining question-wording and clarifying the instructions.

3.2.4 Procedure

The online questionnaire was made available to participants through the Prolific recruitment site (prolific.com). The advertisement on Prolific asked for British students currently studying at a UK HEI, who had started studying before the pandemic.

The study was conducted in December 2021. All respondents were paid GBP 2.00 (regardless of whether they met the inclusion criteria).

3.2.5 Data Analysis

The questionnaire produced both quantitative and qualitative data. As discussed in Section 1.2, the Likert items were often very skewed, so I analysed them using non-parametric statistics. Wilcoxon One Sample Signed Ranks Tests were used to test whether the distribution of ratings differed significantly from the midpoint of the scale. As the sample size was large (more than 30 observations), the Z statistic for the normal distribution approximation was used as an extension of the Wilcoxon T (Siegel & Castellan, 1988).

In the open-ended questions, participants were given codes in the form UK-S1, to indicate UK and students. Thematic analysis was conducted as described in Section 1.2, following an Inductive thematic analysis (Braun et al., 2019). Sub-themes were developed where appropriate, though some analyses included limited data, making sub-themes unnecessary in certain cases.

3.3 Results

Before addressing the main three RQs, the results of participants’ own understanding of online privacy and security are presented. Participants described what online privacy and security meant to them, and all 71 participants answered.

The thematic analysis of responses is summarised in Table 3.3. Nearly half the participants (30/71, 42.3%) produced somewhat circular definitions by using the term “secure” (or close variations), and more than a quarter (20/71, 28.2%) by using “private” (or close variations). However, many students elaborated on what online security or privacy was for them: most commonly referring to their data (32/71, 45.1%), but also to online activities and access to their institution’s resources. Smaller numbers of participants brought in different concepts such as their data being protected (17, 23.9%) or not accessible, except to those authorised (16, 22.5%) or not able to be stolen, hacked, or leaked (13, 18.3%), shared without permission (8, 11.3%) or not misused (8, 11.3%). Smaller numbers of participants (less than 10%) also mentioned preventing scams, anonymity in online activities, having control over one’s data, and confidentiality.

Table 3.3 Participants’ understanding of online privacy and security (N= 71)

THEME /Sub-theme	Examples
SECURE (Mentioned by 30 participants, 42.3%; 32 distinct mentions, 23.0%)	
Data/Information	Keeping my data, work, and login details secure (UK-S4)
18 (56.3%)	Keeping my information secure ... whilst studying online (UK-S46)
During online activities	... being safe ... while using the Internet (UK-S13)
10 (31.3%)	Attending over a secure platform i.e. Microsoft Teams (UK-S69)
In accessing institutional resources	being able to access institution resources safely (UK-S11)
4 (12.5%)	Making sure my university site is secure (UK-S36)
PRIVATE (Mentioned by 20 participants, 28.2%; 21 distinct mentions, 15.1%)	
Data/Information	Keeping your information private within the university (UK-S43)
14 (66.7%)	Keeping all personal data and the course progress of students private (UK-S49)
During online activities	Being able to participate in online lectures without other students and lecturers being able to see and hear people in the background of your home (UK-S11)
7 (33.3%)	Having a private connection when attending online classes and meetings (UK-S69)
PROTECTION (Mentioned by 17 participants, 23.9%; 15 distinct mentions, 10.8%)	
	having reliable ... protection against online threats (UK-S21)

... protection of personal data (UK-S27)	
NOT ACCESSIBLE (Mentioned by 16 participants, 22.5%; 17 distinct mentions, 12.2%)	
Unauthorized persons are not able to access data	... making sure that personal information, passwords, and private files cannot be accessed without my permission ... (UK-S25)
	My details are only available on an as-requested basis and only to the university (UK-S47)
STOLEN, HACKED, LEAKED, SHARED (Mentioned by 13 participants, 18.3%; 16 distinct mentions, 11.5%)	
Data cannot be stolen, hacked, or leaked	Won't risk my passwords or data being leaked (UK-S24)
	... my information online is ... not vulnerable to be stolen (UK-S44)
NOT SHARED (Mentioned by 8 participants, 11.3%; 8 distinct mentions, 5.8%)	
Data cannot be shared (without permission)	That your data cannot be ... passed on (UK-S20)
	Your data is not shared with relevant groups (UK-S41)
PREVENT USE WITHOUT PERMISSION OR MISUSE (Mentioned by 8 participants, 11.3%; 7 distinct mentions, 5.0%)	
	Someone else using my information without my permission for their benefit (UK-S10)
	My information online is ... not vulnerable to being used in a harmful way (UK-S44)

3.3.1 UK HEI students' experience the move to online teaching due to the pandemic (RQ1)

Participants were asked whether their teaching before the pandemic was totally online, totally face-to-face, or blended. 60 participants (84.5%) reported that it had been totally face-to-face, with only 5 (7.0%) reporting totally online, and 6 (8.5%) reporting blended. In response to the pandemic, teaching for the majority of participants (54, 76.1%) moved (or remained) totally online, with 17 (23.9%) reporting moving partially online (see Table 3.4). Participants whose teaching did not move totally online were mainly studying medicine, physics, chemistry or biology, subjects where online teaching would have been the most difficult.

Thus, for a majority of participants (44, 61.9%) the pandemic resulted in a radical shift of teaching modes, from totally face-to-face to totally online. While 5 participants were already receiving online teaching before the pandemic and continued in this mode throughout, undoubtedly the pandemic still influenced them.

Table 3.4 Modes of teaching change in response to the pandemic

Modes of teaching before the pandemic	Move totally online	Move partly online	Total
Face to face	44 (73.3%)	16 (26.7%)	60 (100%)
Blended	5 (83.3%)	1 (16.7%)	6 (100%)
Online	5 (100.0%)	0 (0.0%)	5 (100%)
Total	54 (76.1%)	17 (23.9%)	71 (100%)

In a follow-up open-ended question, nearly half the participants (30/71, 42.2%) provided their experiences of online teaching since the pandemic. The thematic analysis of responses is summarised in Table 3.5. More than one-third of the participants who responded (11/30, 36.6%) expressed ambivalence toward the transition to online teaching, mentioning both negative and positive aspects. For instance, UK-S3 stated "since the pandemic started, my courses have all been online. I've found that things are mainly virtual; this has its positives and negatives."

Nearly one-third of the participants (10/30, 30.3%) identified negative aspects of the move to online teaching. The most frequently mentioned concern, cited by 7 participants (7/10, 70.0%), was the challenge of adapting teaching to online circumstances. For instance, Participant UK-S41 stated, "It was significantly worse; practical lessons were harder to demonstrate online, and group work suffered." In addition, feelings of isolation were mentioned by nearly a third of the participants (3/10, 30.0%).

On the other hand, nearly one-third of the participants (9/30, 30.0%) mentioned positive aspects of the move to online teaching. The majority of these participants (7/9, 77.7%) mentioned the convenience and flexibility it offered. Another positive aspect was the supportiveness of the staff (2/9 participants, 22.2%).

Table 3.5 Participants experience of moving to online teaching since the pandemic (N= 30)

THEME /Sub-theme	Examples
MIXED REACTIONS TO CHANGES (Mentioned by 11 participants, 36.6%)	
Overall mixed reaction	Since the pandemic started, my courses have all been online. I've found that things are mainly virtual; this has its positives and negatives (UK-S3)
11 (36.6%)	With everything being online and thus available to view/go through at any time, it is a double-edged

	sword of being able to decide to do it when it best suits you (e.g. in terms of learning pace, an hour of the day, a whole lecture block consecutively) and a slippery slope of then being able to procrastinate doing it at all! (UK-S66)
NEGATIVE ASPECTS OF THE SHIFT TO ONLINE TEACHING (Mentioned by 10 participants, 33.3%)	
Practical and group teaching sessions	It was significantly worse, practical lessons were harder to demonstrate online and group work (UK-S41)
7 (70.0%)	I have found it harder as on hands practices have not been possible (UK-S18)
Social isolation	I've felt very isolated from my cohort besides the people I met in the first term(UK-S27)
3 (30.0%)	I believe it impacted my social experiences a great deal and it was hard to connect and network with other people (UK-S26)
POSITIVE ASPECTS OF THE SHIFT TO ONLINE TEACHING (Mentioned by 9 participants, 30%)	
Convenience and Flexibility	More lecture-based materials are available thanks to lecture recording systems implemented, and more computer-based learning (UK-S16)
7 (77.7%)	I've been able to learn from home and record my lessons live to make it easier to go back to the information and process it better (UK-S7)
Supportive Staff	I believe the teaching experience was great. The lecturers were understanding and helpful. (UK-S26)
2 (22.2%)	During the restrictions, my degree was online, but the content was live, and tutors were engaged and helpful (UK-S62)

Participants rated how frequently they experienced various types of teaching sessions both before and since the pandemic, (see Table 3.6). Comparing the two periods, students' experience with lectures (whether live or recorded) and one-on-one sessions with teachers remained at similar levels. However, since the pandemic, participants' experience with the other three types of teaching sessions (small group discussions, lab sessions, and fieldwork) has significantly decreased.

Table 3.6 Ratings of experience with different types of teaching sessions before and since the pandemic (“Never” scored as 1 to “Very frequently” scored as 7) (N = 71)

Types of teaching sessions	Before the pandemic Median (SIQR)	Since the pandemic Median (SIQR)	Z	p
Lectures (live or recorded)	7.00 (0.50)	6.00 (1.50)	-0.20	n.s.
Small group discussions/seminars	6.00 (1.50)	4.00 (1.50)	-4.66	< 0.001
Lab sessions (e.g. chemistry or computer labs)	3.00 (2.40)	2.00 (1.50)	-4.88	< 0.001
One-to-one sessions with teachers	3.00 (1.00)	2.00 (1.50)	-1.31	n.s.
Fieldwork (i.e. sessions away from the institution)	1.00 (1.00)	1.00 (0.00)	-3.59	< 0.001

Participants rated their typical level of participation (e.g. asking questions, participating in discussions, interacting with the teacher or other students) in the different types of teaching (Table 3.7) before and since the pandemic. Participation significantly decreased in lectures and small group discussions but remained relatively stable in lab sessions, one-to-one sessions with teachers, and fieldwork.

Table 3.7 Participants’ typical level of participation in the different types of teaching before and since the pandemic (“Never” scored as 1 to “Very frequently” scored as 7)

Types of teaching sessions	Before the pandemic Median (SIQR)	Since the pandemic Median (SIQR)	Z	p
Lectures (live or recorded)	3.00 (3.00)	2.00 (2.00)	-3.14	<.001
Small group discussions/seminars	5.00 (1.00)	3.00 (1.00)	-4.84	<.001
lab sessions (e.g. Chemistry or computer labs)	3.00 (2.00)	3.00 (2.00)	-3.47	n.s.
One-to-one sessions with teachers	5.00 (1.50)	4.40 (1.50)	-2.54	n.s.
Fieldwork (i.e. sessions away from the institution)	4.40 (1.50)	3.60 (1.50)	-1.48	n.s.

Participants rated their level of participation since the pandemic is lower if they know the session is being recorded (“not at all” = 1 to “very much” = 7). Ratings were not significantly different from the midpoint of the scale (Median = 5.00, SIQR = 2.00, One sample Wilcoxon Signed Rank Test, Z = 0.13,

n.s.). The result indicates that students think their level of participation is somewhat lower if they know the session is being recorded for later viewing.

In a follow-up open-ended question, about one-third of the participants (22/71, 32.0%) described how the level of their participation was affected if the session was recorded. The thematic analysis of responses is summarised in Table 3.8. More than half of the participants (13/22, 59 %) reported their level of participation was lower if sessions were recorded, offering a number of different reasons. The two most commonly mentioned reasons (both raised by 46 % of participants) were being embarrassed to answer incorrectly and concerns about using a webcam or microphone to ask questions or participate in discussions. Participant UK-S30 mentioned that “asking questions or participating in a discussion your comment would remain on the chat which I found embarrassing especially if you got the answer wrong”. Only one participant (UK-S11) mentioned privacy and anonymity concerns: “including our full name which is something I did not really like”.

Less than one-third (8/22, 36.4 %) of the participants reported that their level of participation was not affected by sessions being recorded. One participant reported that their level of participation to be higher if they knew that sessions would be recorded: “I try to be more involved when it is being recorded as they are usually used for educational purposes later” (UK-s45).

Table 3.8 Reasons why participants' level of participation is lower if the session is recorded (N=22)

THEME /Sub-theme	Examples
IF PARTICIPANTS' LEVEL OF PARTICIPATION IS LOWER (Mentioned by 13 participants, 59.0%)	
Embarrassment 6 (46%)	I feel more embarrassed to say something that may be incorrect if I know that it is being recorded for future use (UK-S30)
webcam or microphone on 6 (46%)	It is more awkward when asking questions with lag and not wanting to be recorded (UK-S50) I would be less inclined to speak out loud / with my camera on, especially if the lecture is being recorded (UK- S64)
	I do not want to be recorded speaking (UK- S39)
IF NO EFFECT ON THE PARTICIPANTS' LEVEL OF PARTICIPATION (Mentioned by 8 participants, 36.4 %)	
Does not mind/ not influenced 8 (36.4%)	Whether sessions are recorded or not does not influence my outlook (UK-S13) I don't mind if the sessions are being recorded - if I have something to contribute then I will (UK-S32)

Participants were asked whether they submitted their work online in three different situations, before and since the pandemic (see Table 3.9). For formative assessments and online exams, the frequency of online submission has significantly increased since the pandemic, while for formal assessments, the frequency has remained the same. These results also indicate that the frequency of online exams was very low before the pandemic compared to the other two assessment types.

Table 3.9 Frequency of submitting work online (“Never” scored as 1 to “Very frequently”) (N=71)

Assessment types	Before the pandemic Median (SIQR)	Since the pandemic Median (SIQR)	Z	p
Formative assessments (for feedback only)	5.00 (0.75)	6.00 (1.00)	2.56	<.001
Summative assessments (marked)	7.00 (1.50)	7.00 (0.50)	3.13	n.s.
Online exams	2.00 (2.50)	7.00 (1.50)	5.07	<.001

In a follow-up open-ended question, participants were asked whether they knew the procedures by which their institution ensured the privacy and security of the work they submitted online. A majority of participants (43/71, 60.5%) described such procedures. A thematic analysis of these procedures is summarised in Table 3.10.

The most frequently mentioned procedure (21/43 participants, 48.8%) was that participants submitted their work through the university portal. The second most frequently mentioned procedure (14/43 participants, 32.5%) focused on the anonymization of submitted work, and the submission names were replaced with random numbers. Less frequently mentioned procedures (raised by less than 10% of participants) were using cloud services such as Dropbox or One Drive, submitting work through email, through a private link with a unique code that changed monthly, or using their own secure login and verification process.

Table 3.10 Procedures used to ensure the privacy and security of any work participants submitted online before the pandemic (N=43)

THEME/Examples
SUBMITTED THROUGH UNIVERSITY PORTAL (Mentioned by 21 participants, 48.8%)
Submit it on our university portal. I assumed that they were safe and secured (UK-S10)

SUBMITTED WORK IS ANONYMOUS (Mentioned by 15 participants, 32.5%)

Using an anonymised submission service e.g. Turnitin (UK-S66)

USED CLOUD SERVICES SUCH AS DROPBOX OR ONEDRIVE (Mentioned by 4 participants, 9.3%)

Everything has always been done through Google Drive and Google Classroom, which I assume to be pretty secure (UK-S30)

In a follow-up open-ended question, participants were asked whether they knew the procedures by which their institution ensured the privacy and security of the work they submitted online since the pandemic. A majority of participants (55/71, 77.4%) described such procedures. A thematic analysis of these procedures is summarised in Table 3.11.

The most frequently mentioned response (35/55 participants, 63.3%) was that the same procedures as before the pandemic were still in place. The second most frequently mentioned response (14/55 participants, 25.4%) referred to the introduction of new security and privacy procedures, including the use of plagiarism detection software, secure login and ID verification, monitoring during online exams, and anonymized submissions. Less frequently mentioned responses reflected uncertainty about security and privacy procedures.

Table 3.11 Procedures used to ensure the privacy and security of any work participants submitted online since the pandemic (N=55)

THEME/Sub-theme	Examples
NO CHANGE IN SECURITY AND PRIVACY PROCEDURES (Mentioned by 35 participants, 63.3%)	
Same Procedures as before the pandemic	Hasn't changed (UK-S5)
	Same as before (UK-S31)
INTRODUCTION OF NEW SECURITY AND PRIVACY PROCEDURES (Mentioned by 14 participants, 25.4%)	
Use of plagiarism detection software 6 (42.8%)	We have been told to use Turnitin a lot (UK-S11)
	All assessments and exams have been checked for originality/plagiarism (UK-S56)
Secure login and identity verification 3 (21.4%)	Each student has a secure log-in. Log-in needs to be verified (UK-S19)
	We have to undergo ID verification checks before taking exams (UK-S29)
Anonymized submissions (blind grading) 3 (21.4%)	We don't put our first names on the exam papers, just our exam numbers" (UK-S16)
	We used blind grading numbers to prevent any examiner bias (UK-S63)

Monitoring during online exams	We were asked to download software on the computer that allowed invigilators to watch your screen and use your computer camera (UK-S59)
2 (14.2%)	Most recent exams of June 2020, the university used a new site, which allowed the exams to be timed (UK-S68)
UNCERTAINTY ABOUT SECURITY AND PRIVACY PROCEDURES (Mentioned by 6 participants, 10.9%)	
	I am not sure (UK-S35)
	Not that I know of (UK38, UK57)
	I'm unsure (UK50)

Participants were asked to describe the main challenges they faced in online teaching since the pandemic. Almost all participants (68/71, 95.8%) mentioned challenges, with only two participants not reporting any, both had prior experience with fully online teaching before the pandemic. One participant did not answer the question. A thematic analysis of the challenges is presented in Table 3.12.

The most commonly mentioned challenge (20/68 participants, 29.4%) was less interaction with teachers and other students. The second most commonly mentioned challenge (16/68 participants, 23.5%) was keeping motivation to attend lectures or seminars. Less frequently mentioned challenges (raised by less than 10% of participants) included not having a workspace at home, feeling isolated, reduced hands-on practice, a lack of boundary between studies and personal life, adapting to the use of new systems such as videoconference technologies, technical problems while using these technologies, and looking at a screen for hours every day which made participants' eyes tired, unfair marking of assessments, sharing computers with their children who were home-schooling during the lockdown, the greater self-study and research required, recording lectures (raised by one participant who mentioned if the lecturers leave their webcams on during live lectures they are better understood), and small group and one-to-one meetings which were much worse online than in person.

Table 3.12 Main challenges in online teaching since the pandemic (N=68)

THEME/Examples
LESS INTERACTION (Mentioned by 20 participants, 29.4%)
Reduction in interaction and mutual support with other students (UK-S25)
...less connection with my lecturers and fellow students (UK-S54)
KEEPING MOTIVATED (Mentioned by 16 participants, 23.5%)

Finding the motivation to stay on top of my workload and I find myself not attending the live lectures in hopes of catching up, but it never happens (UK-S14)

HAVING A WORKSPACE AVAILABLE AT HOME (Mentioned by 6 participants, 8.8%)

Hard to get a whole room to myself to do the exams, the biggest challenge was during the timed exams (UK-S11)

lack of good study space at home (UK-S10)

FEEL ISOLATED (Mentioned by 5 participants, 7.4%)

Feel very isolated. You missed out on the personal contact day-to-day (UK-S20)

REDUCED HANDS-ON PRACTICE (Mentioned by 4 participants, 5.8%)

I have also struggled a lot with not having labs, as I am very much a kinaesthetic learner and find things much easier to understand once. (UK-S66)

LACK OF BOUNDARY BETWEEN STUDIES AND PERSONAL LIFE (Mentioned by 4 participants, 5.8%)

No separation between the university and free time, which made both relaxing and focusing extremely difficult at times. (UK-S16)

ADAPT TO USE THE NEW SYSTEMS (Mentioned by 3 participants, 4.4%)

The main challenge is understanding how to use the new systems such as Microsoft Teams and Google Meet. (UK-S3)

TECHNICAL PROBLEMS (Mentioned by 3 participants, 4.4%)

Using videoconferencing technologies causes technical problems for some people involved which impacts everyone else (UK-S22)

TOO MUCH SCREEN TIME (Mentioned by 2 participants, 2.9%)

looking at a screen for several hours every day. can make your eyes tired (UK-S34)

3.3.2 UK HEI students' experience the devices and technologies used in online teaching before and since the pandemic (RQ2)

Participants were asked about their use of institution-supplied and personal devices in online teaching, before and since the pandemic (see Table 3.13). The use of institutional desktops significantly decreased since the pandemic. There were no significant differences in the use of other Institution-supplied devices. For personal devices, there were no significant differences in their use.

Table 3.14 shows the comparisons of the ratings of use of the four devices (both institution-supplied and personal devices), both before and since the pandemic. There were significant differences between devices in all four comparisons. Before the pandemic, participants generally

favoured personal laptops and smartphones over tablets and desktops, while they favoured institution-supplied desktops over laptops, smartphones, and tablets. Similar patterns have continued since the pandemic, with desktops being preferred for institutional use and smartphones and laptops for personal device use.

Table 3.13 Devices used differently in higher education before and since the pandemic (from “Never” scored as 1 to “Very frequently” scored as 7) (N=71)

Device	Before the pandemic Median (SIQR)	Since the pandemic Median (SIQR)	Z	p
Institutional				
Desktop	2.00 (2.00)	1.00 (0.50)	-5.05	<0.001
Laptop	1.00 (0.00.)	1.00 (0.00)	-1.79	n.s.
Tablet	1.00 (0.00)	1.00 (0.00)	0.71	n.s.
Smartphone	1.00 (0.00)	1.00 (0.00)	-1.34	n.s.
Personal				
Desktop	1.00 (3.00)	1.00 (2.50)	2.26	n.s.
Laptop	7.00 (3.00)	7.00 (3.00)	-.23	n.s.
Tablet	1.00 (1.50)	1.00 (1.50)	-.10	n.s.
Smartphone	5.00 (2.00)	6.00 (2.00)	1.88	n.s.

Table 3.14 Comparison of different devices used, institutional and personal, before and since the pandemic (N=71)

Before the pandemic	Friedman's test probability	Post hoc comparisons
Institutional devices	Q = 95.99 p < 0.001	Desktop > Laptop / Smartphone / Tablet
Personal devices	Q = 106.15 p < 0.001	Laptop / Smartphone > Tablet / Desktop
Since the pandemic		
Institutional devices	Q = 46.67 p < 0.001	Desktop > Laptop / Smartphone / Tablet
Personal devices	Q = 63.69 p < 0.001	Laptop/ Smartphone > Tablet / Desktop

Participants were asked about their use of videoconferencing technologies such as Blackboard Collaborate, Microsoft Teams, and Zoom. Before the pandemic, only 17 (23.9%) reported using them, one participant (1.4%) was unsure, and the majority (53/71, 74.6%) reported that they did not use these technologies. However, in response to the pandemic, most participants (66/71, 93.0%) reported using them.

Participants were asked about the challenges of using videoconferencing technologies in online teaching since the pandemic, with 67 (94.4%) mentioning challenges. A thematic analysis of these challenges is summarised in Table 3.15. Nearly half of these participants (33/67, 49.3%) faced technical problems including internet connection problems, and microphone and webcam issues (for the students or their teachers). UK-S11 reported “sometimes the microphone doesn't always connect. I once spoke for a good 3 minutes in a group breakout room, just to discover nobody could hear”.

Another challenge (15/67 participants, 22.4%) was the difficulty of using videoconferencing technologies both for students themselves and for their teachers. UK-S44 mentioned that “staff found these apps very difficult to use and students were often helping them use these which consumed more time than needed.” Another challenge (8/67 participants, 11.9%) was lack of participation. UK-S64 mentioned “Lack of participation because a lot of people in my seminars will just have their webcams off and mute themselves”. Less frequently mentioned challenges (mentioned by less than 10% of participants) were that participants felt it was hard to keep focus, find resources, prepare to start a session, accept scheduled meeting invitations, and the impact of the pandemic on the ability to build relationships with people.

Table 3.15 Challenges with videoconferencing technologies since the pandemic (N=67)

THEME/ Examples
TECHNICAL PROBLEMS (Mentioned by 33 participants, 49.3%)
Connection, sometimes the teacher's connection is so bad you can barely hear them (UK-S29) Teachers' cameras are not great or are at a bad angle, so you don't get a great picture of their teaching. (UK-S6)
I have occasionally experienced trouble getting my hardware (microphone) to play nice with the software (UK-S31)
DIFFICULTY OF USING VIDEOCONFERENCING TECHNOLOGIES FOR STUDENTS AND THEIR TEACHERS (Mentioned by 15 participants, 22.4%)
Logging on can sometimes be difficult, and instructions aren't always clear. (UK-S12)
staff not knowing how to use it (UK-S1)
LACK OF PARTICIPATION (Mentioned by 8 participants, 11.9%)

Lack of participation because a lot of people in my seminars will just have their cameras off and mute themselves. (UK-S64)

HARD TO KEEP FOCUSED (Mentioned by 4 participants, 4.5%)

It is much harder to stay focused when attending an online class (UK-S13)

Participants rated how often they had their webcam on during different types of OTSs (see Table 3.16). Ratings for online lectures were significantly below the midpoint of the scale indicating that participants very infrequently had their webcam on during this type of session. On the other hand, ratings for one-to-one sessions with teachers were significantly above the midpoint, indicating that participants had their webcams on frequently for these sessions. For lab sessions, small group sessions/seminars and online study sessions with other students, the median ratings were not significantly different from the midpoint, indicating that participants had their webcam on sometimes during these sessions.

Table 3.16 Frequency of having the webcam on during different types of OTSs (from “Never” scored as 1 to “Very frequently” scored as 7) (N=71)

Types of OTSs	Median (SIQR)	Z	p
Online lectures	2.03 (1.76)	-5.65	< .001
Small group sessions/seminars	3.32 (2.27)	-2.61	n.s.
Lab sessions (e.g. chemistry, biology, or computer labs)	2.57 (2.00)	-2.84	n.s.
Online study sessions with other students	4.09 (2.34)	0.23	n.s.
One-to-one sessions with your teachers	5.46 (2.13)	3.71	< .001

In a follow-up open-ended question, a majority of participants (57/71, 80.3%) described reasons influencing their decision to have their webcam on during different types of OTSs. The thematic analysis of reasons is summarised in Table 3.17.

The two most commonly mentioned reasons were peer behaviour, that is if most of the other students had their webcams on, the participant would have theirs on; and the size of the group present in the sessions. Participants indicated that they would be more likely to have their webcam on if the group was small. The other commonly mentioned reasons were if teachers asked students to have their webcams on and if the participant expected to speak during the session. Less frequently

mentioned reasons (raised by less than 10% of participants) included whether the session was one-to-one with the teacher, whether the session was recorded, if participants knew the people involved in the session, and what their mood and appearance were, having the webcam on to concentrate on the session.

Table 3.17 Reasons influencing participants' decision to have their webcam on during different OTSs (N=57)

THEME/ Examples
PEER BEHAVIOUR (Mentioned by 13 participants, 22.8%)
I see how many other students turn their cameras on (UK-S34)
GROUP SIZE (Mentioned by 10 participants, 17.5%)
The size of the group present influences my decision, the smaller the group the more likely I am to turn my camera on (UK-S13)
TEACHERS' REQUIREMENTS FOR WEBCAM USE (Mentioned by 9 participants, 15.7%)
Depends on whether it's mandatory (UK-S24)
SPEAKING ROLE (Mentioned by 6 participants, 10.5%)
If I am speaking, I turn the camera on (UK-S47)
ONE-TO-ONE SESSIONS (Mentioned by 5 participants, 8.7%)
Having a one-to-one with my teacher in which case I feel it would be rude to have it switched off (UK-S19)
MOOD AND APPEARANCE (Mentioned by 4 participants, 7.0%)
It depends on my mood and appearance at the time of online lectures (UK-S59)
RECORDING OF SESSIONS (Mentioned by 4 participants, 7%)
I only turn on my camera in meetings that are not recorded (UK-S16)
FAMILIARITY WITH OTHER PARTICIPANTS (Mentioned by 3 participants, 5.3%)
How well I know the people involved (UK-S61)
NEED FOR CONCENTRATION (Mentioned by 2 participants, 3.5%)
When I turn my camera off, I won't concentrate (UK-S35)

Participants rated their perception of the typical level with which their teachers had their webcam on during different types of teaching sessions (see Table 3.18). In all cases, they rated their perception of the frequency of their teachers having their webcams on significantly above the midpoint of the rating scale, indicating that they perceived their teachers having their webcams on frequently, but not all the time.

Table 3.18 Ratings of perception of the frequency of the teacher having their webcam on during different types of OTSs (from “Never” scored as 1 to “Very frequently” scored as 7) (N=71)

Types of OTSs	Median (SIQR)	Z	p
Online lectures	5.57 (1.91)	5.57	< .001
Small group sessions/seminars	5.69 (1.98)	5.24	< .001
Lab sessions (e.g. chemistry, biology, or computer labs)	5.67 (2.09)	3.65	< .001
Online study sessions with other students	5.46 (2.13)	6.30	< .001
One-to-one sessions with your teachers	5.57 (1.91)	5.57	< .001

In a follow-up open-ended question, a majority of participants (57/71, 80.9%) gave their attitudes about whether teachers should have their webcams on. A thematic analysis of these preferences is summarised in Table 3.19. More than half of these participants (38/57, 66.7%) preferred their teachers to have their webcam on, whereas 10.0% (6/57) preferred the teacher to have their webcam off, and 18.3% (13/57) were indifferent.

For those expressing a preference for the teacher to have their webcam on, nearly half (16/38, 42.1%) did not provide any particular reason. However, nearly a quarter of these participants (8/38, 21.0%) preferred the teacher to have their webcam on because they felt it was more engaging. In addition, 15.8% of participants (6/38) felt that it made the experience more personal, while 10.5% (4/38) felt it was easier to concentrate and helped them focus better. Finally, 10.5% of participants (4/38) thought that, as the teacher is leading the class, they should have their webcam on.

Reasons for preferring the teacher to have their webcam off were that sharing a whiteboard or screen is a better use of screen space than showing the teacher’s face, mentioned by half the participants who preferred this option (3/6, 50%), or they found it distracting if the teacher has their webcam on (3/6, 50%). For example, UK-S11 mentioned “I don’t want to see their homes/ environment as much as I don’t think they want to see mine. It creates clear boundaries I think’.

Table 3.19 Attitudes on whether teachers should have their webcams on (N=57)

THEME /Sub-theme	Examples
PREFERENCE FOR TEACHER HAVING WEBCAMS ON (Mentioned by 38 participants, 66.7%)	
No particular reason provided 16 (42.1%)	I believe that all teachers should have their webcams on unless we were told before that they wouldn't (UK-S62)
More interaction or engaging 8 (21.0 %)	I prefer it when they do have their cameras on as I find the lecture more engaging (UK-S9) I prefer it if they do so they are not just a voice. I want to see their reactions (UK-S20)
Feels more personal 6 (15.9%)	It is nice to see them, so they feel real (UK-S 2) I prefer it as it seems more personal and as normal as possible (UK-S36)
Due to leading the session 4 (10.5%)	I think it is really important that they turn their webcams on as they lead the session..... It can also encourage students to turn on their webcams (UK-S64)
Helps with focus 4 (10.5%)	help to put a face to the voice in terms of increasing attention and focus (UK-S68)
INDIFFERENT (Mentioned by 13 participants, 18.3%)	
	Doesn't bother me either way (UK-S5) I feel indifferent towards this (UK-S44)
PREFERENCE FOR TEACHERS HAVING WEBCAM OFF (Mentioned by 6 participants, 10.0%)	
Sharing a whiteboard is better 3 (50%)	Sharing a whiteboard/screen is a better use of screen space than showing their face (UK-S46)
Distracting 3 (50%)	Don't think it helps me to stay focused on the lecture if they have it on (UK-S60)

Participants were asked about their use of online chat technologies —**such as WhatsApp, Facebook Messenger, Slack, Discord, and Telegram**— for both synchronous and asynchronous communication before and since the pandemic. For synchronous communication before the pandemic, more than half of the participants (37/71, 52.2%) reported using online chat technologies, while fewer than half (32/71, 45.1%) did not. Two participants (2.8%) could not recall their previous use. Since the pandemic, half of the participants (36/71, 50.7%) reported using online chat technologies for synchronous communication. Thus, there was no significant change in use before and since the pandemic (McNemar test $\chi^2 = 1.45$, n.s.).

For asynchronous communication, nearly half of the participants (34/71, 47.9%) reported using these technologies before the pandemic, while a similar proportion (32/71, 45.1%) did not. Five participants (7.0%) could not recall their usage. Since the pandemic, 57.7% of participants (41/71)

reported using asynchronous communication technologies. However, there was no significant change in use before and since the pandemic (McNemar test $\chi^2 = 2.50$, n.s.).

Participants were asked about any challenges of using both synchronous and asynchronous online chat technologies in online teaching. About half the participants (34/71, 47.9%) mentioned challenges. A thematic analysis of these challenges is summarized in Table 3.20. The most commonly mentioned challenge reported by nearly one-third of participants (10/34, 29.4%) was the time taken to receive a reply and sometimes not getting a response. Further challenges were having to keep checking chats for any updates (6/34, 17.6%) and the challenge of putting one's thoughts into words in a way that would be fully understood by others (5/34, 14.7%). Other challenges (raised by less than 10% of participants) included the difficulty of communicating with those who did not use the same online chat technologies or who did not know how to use them, receiving a lot of pop-up notifications causing participants to feel overwhelmed, Identifying the right people to communicate with, feeling awkward about having a casual webchat with a person in authority, someone else sending messages unrelated to the topic, people not reading messages, and having difficulty being able to connect or join the group.

Table 3.20 Challenges of using online chat technologies in online teaching (N=34)

THEME/Examples
DELAY IN RECEIVING REPLIES (Mentioned by 10 participants, 29.4%)
Waiting for a reply (UK-S19)
Not getting a response (UK-S32)
NEED TO CHECK CHATS FOR UPDATES (Mentioned by 6 participants, 17.6%)
difficult and distracting to keep checking them for updates time and again (UK-S10)
DIFFICULTY OF EXPRESSING THOUGHTS CLEARLY (Mentioned by 5 participants, 14.7 %)
Understanding what people mean in their messages, sometimes the messages can be interpreted as something different from what they are trying to say (UK-S10)
THE RANGE OF TECHNOLOGIES USED (Mentioned by 3 participants, 8.8%)
.. but not everyone has the same access to apps, which can be challenging. (UK-S66)
LACK OF SKILL WITH THE TECHNOLOGIES (Mentioned by 3 participants, 8.8%)
IT skills, both mine and other students. Much harder to share information than in f2f (UK-S26)

3.3.3 UK HEI students' concerns about privacy and security in online teaching (RQ3)

Participants rated their level of concern about privacy and security when using different devices in online teaching. Table 3.21 shows that the ratings were significantly below the midpoint of the scale for all devices, whether institutional or personal.

Table 3.21 Level of concern about privacy and security when using different devices in online teaching (from “Not at all concerned” scored as 1 to “Very concerned” scored as 7)

Devices	Median (SIQR)	Z	p
Institutional			
Desktop computer	1.00 (0.50)	-5.70	< 0.001
Laptop computer	1.00 (0.50)	-4.02	< 0.001
Tablet	1.00 (0.00)	-3.79	< 0.001
Smartphone	1.00 (0.00)	-3.84	< 0.001
Personal			
Desktop computer	1.00 (0.50)	-5.09	< 0.001
Laptop computer	1.00 (1.00)	-6.73	< 0.001
Tablet	1.00 (0.50)	-5.30	< 0.001
Smartphone	1.00 (1.00)	-6.37	< 0.001

However, it is interesting that despite the very low ratings, over a third of the participants (26/71, 36.6%) raised concerns in the follow-up open-ended question about privacy and security concerns about using different devices (see Table 3.22). Often participants did not specify which devices they had concerns about, the frequently mentioned institutional or personal devices in general. So, comments were divided into those concerning institutional or personal devices, concerns about both institutional and personal devices, or not specified.

Table 3.22 Privacy and security concerns about using institutional and personal devices in online teaching situations (N = 26)

THEME /Sub-theme	Examples
INSTITUTIONAL DEVICES/SYSTEMS (Mentioned by 13 participants, 50.0%)	
Devices insecure 11 (84.6%)	Institution desktops are accessible by anyone, and although you need login details, I have some concerns about individual data saved on the computer (UK-S16) Institution desktop - I would be worried that I would not log out properly or something would go wrong and the next person to use the desktop would have access to my information (UK-S19)
Communication between institutional devices/systems and personal devices 3 (23.1%)	Sometimes, with my personal items, I feel like the university the university software is easily breachable. The software seems outdated and even though I am not a tech wizard, often feels unsafe to use ... it does make me a little paranoid that anyone can get into my computer through the university servers (UK-S29) The only concerns I have with my personal computers are related to the university login and having had IT access my personal computer a few times before realising that I had not turned off a setting (UK-S16)
Losing work on institutional devices 2 (15.4%)	potentially losing work if I was using a university computer or laptop (UK-S9) I also get concerned about the device itself, failing and losing all the work that I have saved (UK-S11)
PERSONAL DEVICES (Mentioned by 10 participants, 38.5%)	
Hacking 5 (50.0%)	My devices are protected but there are smart people out there who can easily get into the private files (UK-S43) Personal laptop: ... worried I'd lose all personal and academic data if hacked (UK-S66)
Viruses 2 (20.0%)	The desktop and laptop from both the institution and home ... are both open to viruses (UK-S3) I have the normal amount of anxiety surrounding getting viruses on your devices ... and the collection of personal information by online companies (UK-S63)
Losing work on personal devices	I have concerns that my information or documents may be ... lost (UK-S30)

2 (20.0%)	Having all my notes saved to one device I use so frequently (my laptop), losing it or having issues with it are a concern (UK-S53)
CONCERNS ABOUT BOTH INSTITUTIONAL AND PERSONAL DEVICES, OR NOT SPECIFIED (Mentioned by 8 participants, 30.8%)	
Non-specific concerns	There are many ways that information is not safe online (UK-S13)
5 (62.5%)	Don't want my passwords etc to become known (UK-S17)
Hacking	My devices are protected but there are smart people out there who can easily get into the private files (UK-S43)
2 (25.0%)	Being able to hack my card details and emails (UK-S52)
Viruses	Even with antivirus, I still feel some concern about whether others can access my data (UK-S32)
2 (25.0%)	

Concerns about institutional devices were more frequently mentioned than concerns about personal devices (by 13/26, 50.0% of participants versus 10/26, 38.5%). The most frequently mentioned concern was that institutional devices were insecure (11/13, 84.6%). In particular, having different users access shared machines might be insecure, even if the student logged into individual accounts on those machines. A less frequently mentioned concern was communication between institutional devices/systems and personal devices (mentioned by 3/13 participants, 23.1%). Participants were concerned that if they logged onto their institutional system from their personal devices, the institution might be able to access information on their device, both a privacy and security issue.

For personal devices, the most commonly mentioned concern (5/10 participants, 50.0%) was that their devices might be hacked. A less frequently mentioned concern was viruses and losing work (2/10 participants each, 20.0%). Losing work might not be a security or privacy issue per se, but was mentioned about both institutional and personal devices, so is included in the results. Both viruses and hacking were also mentioned by participants as general concerns.

Participants rated their levels of concern about privacy and security issues about the use of videoconferencing and online chat technologies in online activities and for studying with other students. Table 3.23 shows that in all cases, they rated their concern significantly below the midpoint of the rating scale, so “Not at all concerned”.

Table 3.23 Ratings of concern about online privacy and security about using videoconferencing and chat technologies in online activities (from “Not at all concerned” scored as 1 to “Very concerned” scored as 7) (N=71)

Activities	Median (SIQR)	Z	p
Using videoconferencing technologies in teaching	1.00 (0.50)	-6.89	< .001
Using online chat technologies in teaching	1.00 (0.50)	-6.53	< .001
Using videoconferencing technologies in studying with other students	1.00 (1.00)	-6.75	< .001
Using online chat technologies in studying with other students	1.00 (1.00)	-6.70	< .001

However, in a follow-up open-ended question about any concerns in this area, over a third of participants (28/71, 39.4%) mentioned privacy and security concerns about the use of these technologies. A thematic analysis of these concerns is summarized in Table 3.24. The three most commonly mentioned themes (6/28 participants, 21.4%) were being recorded (without permission), unauthorized people in teaching sessions (and possibly disrupting them) and lack of trust in the institution or the technology.

Interestingly, no participant reported any incident of unauthorized people actually entering a teaching session they were in. However, there have been numerous press reports since the pandemic of this happening during OTSs (Elmer et al., 2021), a phenomenon known as “Zoombombing”, so participants may well have heard about these incidents. The other concerns were about a general lack of trust in either the institution, the technology, or the companies providing the technology, and not knowing who could access recordings of sessions or where they were stored, particularly whether institution staff could access them (5 participants each, 17.9%), and whether the webcam or microphone was on or off (4 participants, 14.3%). This last concern was about whether a student’s webcam or microphone might be on and they were not aware of it and whether others (particularly teachers) might be able to access their webcam or microphone and turn it on or off without the participant’s knowledge or permission. Less frequently mentioned concerns (mentioned by less than 10% of participants who answered) included being involved in discussions with other students who might do/say something that would get the whole group into trouble (this was one of the few concerns about other students) and several concerns which were not necessarily about online privacy and security but of interest, for example not wanting to post a photo of oneself (this could be a privacy

concern, it was not clear), feeling uncomfortable in online sessions, and it being “just difficult to get points across, feels less authentic” (UK-S58).

Table 3.24 Themes reflecting concerns about videoconferencing and online chat technologies (N=28)

THEME/Example
BEING RECORDED (WITHOUT PERMISSION) (Mentioned by 6 participants, 21.4%)
It's also easy to record things without anyone's permission or knowledge (UK-S32)
People being recorded when they don't consent to be (UK-S38)
UNAUTHORISED PEOPLE IN SESSIONS (AND DISRUPTING THEM) (Mentioned by 6 participants, 21.4%)
There have been cases of random people joining Zoom calls if they are public and then causing chaos until they get kicked out (UK-S13)
There's always a risk of someone joining without invitation (UK-S43)
LACK OF TRUST IN THE INSTITUTION OR THE TECHNOLOGY (Mentioned by 6 participants, 21.4%)
I just don't trust the university websites as they are very outdated (UK-S29)
I'm more concerned about online chat technologies as these are run by companies like Facebook which I don't trust (vs trust Zoom etc slightly more) (UK-S66)
NOT KNOWING WHO CAN ACCESS RECORDINGS OF SESSIONS OR WHERE THEY ARE STORED (Mentioned by 5 participants, 17.9%)
The recorded sessions go online with our information and video, and it is hard to know who can access them (UK-S16)
I would want to know ... who will have access to it [the recording], especially if I personally have participated in the conversation or had my camera on. I would want to know where [the recording] will be stored (UK-S19)
WEBCAM/MICROPHONE ON/OFF? (Mentioned by 4 participants, 14.3%)
... that I will accidentally turn my camera on when I don't mean to (UK-S63)
Worries of camera/mic being on when you are not aware that they are (UK-S64)

Participants were also asked about their awareness of institutional policies related to privacy and security in the use of specific digital technologies (videoconference and online chat technologies). Less than one-third of participants (21/71, 29.6%) knew of such policies, a small number of participants (5/71, 7.0%) reported that they thought their institution did not have any policies, and the majority of participants (45/71, 63.4%) were not sure or did not know.

In a follow-up open-ended question, 15.49% of participants (11/71, 15.49%) described their institution's privacy and security policies. The most mentioned policy (4/11, 36.3%) was about not accessing illegal or unsafe websites and storing data safely (e.g., on encrypted drives). The second

most commonly mentioned policy (4/11, 36.3%) was using appropriate authentication methods, such as two-factor authentication. In addition, 27.2% of participants (3/11) mentioned policies requiring using strong passwords.

When asked whether their institution provides training in online privacy and security issues, 14.1% (10/71) reported that training was provided, 22.5% reported that it was not provided (16/71) but the majority were not sure or did not know (45/71, 63.4%). Only two participants (2.8%) reported having received any training.

In a follow-up, open-ended question about training provided, seven participants (7/71, 9.8%) described training, including four participants who mentioned online videos and documents on privacy and security of how to use the institution's apps and websites, but only two participants had had any training, online workshops about privacy and security issues.

Participants rated their levels of concern about online privacy and security issues in a range of specific online teaching situations (Table 3.25, "Not at all concerned" scored as 1 to "Very concerned" scored as 7). Two situations, both relating to being monitored in online examinations, had ratings not significantly different from the midpoint of the scale, indicating participants had moderate levels of concern about online examinations. All the other situations had ratings that were significantly below the midpoint of the scale, meaning participants were not particularly or not at all concerned about them. However, a number of these situations were commonly raised by participants in the open-ended question about privacy and security concerns about videoconferencing and online chat technologies discussed above, namely online sessions being recorded without their knowledge, and unauthorized people attending or disrupting OTSs.

Table 3.25 Ratings of concern about online privacy and security about particular teaching situations (from “Not at all concerned” scored as 1 to “Very concerned” scored as 7)

Situations	Median (SIQR)	Z	p
Having to turn on your webcam during an online exam to allow the teacher to monitor you in real time	4.00 (2.00)	0.03	n.s.
Having to video record yourself during online exams so a teacher can review the video later	4.00 (2.00)	0.29	n.s.
Other students making recordings or screenshots without permission	2.00 (1.50)	-4.68	< .001
Your work is being used as examples without your permission	2.00 (1.50)	-5.36	< .001
Other students making inappropriate comments (sexist, racist)	2.00 (1.50)	-5.66	< .001
Online lectures/seminars are being recorded without your knowledge	1.00 (1.00)	-6.33	< .001
Unauthorised people attending OTSs	1.00 (1.00)	-5.89	< .001
Unauthorised people interrupting OTSs	1.00 (1.00)	-6.09	< .001
Other students harassing you	1.00 (0.50)	-7.04	< .001
Your teacher not turning on their webcam in teaching sessions	1.00 (0.50)	-6.87	< .001
Other students do not turn on their webcams in online sessions	1.00 (0.50)	-7.05	< .001

In a follow-up open-ended question about concerns about these online teaching situations, 30.1% of participants (22/71) raised concerns (Table 3.26), and three participants also raised positive aspects. There was some overlap between the concerns and the answers to the previous open-ended question about the use of digital technologies in online teaching (Table 3.25).

The two most frequently mentioned concerns were being recorded without permission (6/22, 27.3%) and unauthorized people being in an online session and potentially disrupting it (5/22, 22.7%). Another frequently mentioned concern was other students making inappropriate comments in online sessions (3/22, 13.6%). Less frequently mentioned concerns (less than 10% of answers) were possibilities for plagiarism, one’s work being shared without permission, that the teacher could turn

the student's webcam or microphone on without alerting them, and the issue of not wanting to post one's photo.

Table 3.26 Concerns about online privacy and security in particular teaching situations (N=22)

THEME/Example
BEING RECORDED (WITHOUT PERMISSION) (Mentioned by 6 participants, 27.3%)
Being recorded without my knowledge (UK-S7)
Other students making recordings/screenshots: not that concerned as the only likely personal data would be name/face (which could also be found on social media, etc.) (UK-S66)
UNAUTHORISED PEOPLE BEING IN A SESSION (AND DISRUPTING IT) (Mentioned by 5 participants, 2.7%)
Again, my main concern is around people hacking sessions (UK-S3)
Interruptions in teaching sessions are probably the most concerning since it's the most likely to happen (UK-S51)
INAPPROPRIATE COMMENTS FROM OTHER STUDENTS (Mentioned by 3 participants, 13.6%)
There was one issue where a student made some inappropriate comments in the chat feature during a live session; this was dealt with well by the professor ... (UK-S58)
Inappropriate comments/harassment: slightly concerned, but this is no different from when this could happen before the pandemic (UK-S66)

3.4 Discussion and Conclusions

This study investigated the experiences and concerns about privacy and security in the online teaching of UK HEI students before and since the pandemic. It examined students' experiences with personal and institution-supplied devices, as well as their experiences with online technologies such as chat and videoconferencing.

Participants were asked what "online privacy and security" meant to them. The result showed that they generally had basic, if somewhat simplistic, views of online privacy and security. The simplicity of their responses might also stem from the questionnaire format, which encouraged brief responses. These findings suggest the need for further exploration of their understanding through interviews or focus groups. Interestingly, their answers mentioned how these ideas relate to their use of institutional online resources, showing some understanding of the important issues. The lack of previous research on students' understanding of privacy and security points to the need for more studies on this issue.

RQ1 investigated participants' experience with the move to online teaching due to the pandemic. The shift from face-to-face to fully online teaching had a major impact on most UK HEI participants leading to mixed responses. Many reported negative experiences such as difficulty in practical lessons and group work, and social isolation. Others reported positive aspects like convenience and flexibility. These mixed responses are similar to what an earlier study by Nicklin et al. (2022) found that while some students valued the flexibility of online teaching, others faced negative aspects such as limited support and uncertainty. These results show both the positive and negative aspects of online teaching as an outcome expected given the sudden shift due to the pandemic. One interesting finding is the relative stability in one-to-one sessions between students and teachers indicating concerted efforts to maintain these interactions. It is not surprising that the level of lectures has not decreased since the pandemic, as lecturers, in general, were able to record their lectures or give them live online. Neither is it surprising that students reported that the more interactive types of teaching such as small group discussions, seminars, labs, and fieldwork all decreased. These latter types of OTSs have been more difficult, and sometimes impossible, for teachers to organize since the pandemic. Another interesting finding was the impact of recorded online sessions for later viewing on student participation. Lower levels of participation in recorded sessions suggest barriers such as fear of embarrassment and reluctance to use a webcam or microphone.

A follow-up open-ended question response indicates that students may feel more self-conscious about making mistakes in an online recording for later viewing, which could impact their willingness to participate and their confidence. To address this, teachers could encourage participation by creating safe OTEs where mistakes are accepted and offering anonymous participation name options. This is especially important in sessions recorded for later viewing, as students may fear that every mistake is permanently stored. This finding contributes to a growing body of evidence that emphasises the importance of understanding the effects of recording OTSs (Karnad, 2013; Morris, Swinnerton, & Coop, 2019).

The study found a significant increase in online submissions for formative assessments and online exams indicating that HEIs focused more on regular evaluations because of the pandemic. UK HEIs had already implemented privacy and security measures for online submissions before the pandemic. Many students reported submitting their work through secure university portals, which they believed kept their work safe. Some also mentioned that their submissions were anonymized to protect their identities and reduce potential biases in the evaluation process. Since the pandemic, most students noted that these procedures remained in place, indicating that institutions maintained their security systems. Also, some students reported new measures such as plagiarism detection

software, secure logins, identity verification, and continued use of anonymized submissions. These findings show that institutions have maintained effective security and privacy procedures while introducing new measures to protect online submissions.

RQ2 explored participants' experiences with using institution-supplied and personal devices, as well as chat and videoconferencing technologies in online teaching before and since the pandemic. There was a significant decrease in the use of institution-supplied desktops which indicated that students were studying from home instead of on campus reducing their reliance on on-campus resources. In contrast, the use of personal smartphones and laptops remained stable. This stability is perhaps surprising because one might have expected an increase in personal device use given the widespread move to online teaching. However, it appears that students were already used to using personal devices before the transition and their use patterns did not significantly change.

Participants reported an increase in videoconferencing use since the pandemic reflecting its crucial role in facilitating online teaching. However, many students reported technical problems when using videoconferencing as the main challenge. This agrees with Bozkurt et al. (2020), who found that technical problems were common globally even in the UK. In contrast, the use of online chat technologies remained the same from before to since the pandemic. This means that students were already used to using both synchronous and asynchronous chat technologies. Still, some challenges were reported such as receiving too many messages and finding it hard to keep up with chat updates. These issues suggest that using chat needs better management. For example, teachers could set clear rules for chat use to organize discussions into separate channels or threads by topic and help moderate the chat to keep it focused. Also, offering simple training or guidelines for both teachers and students may help reduce message overload and make it easier to follow updates.

Regarding webcam use, participants used webcams selectively, depending on the type of OTSs. In online lectures, they rarely turned on their webcams, while in one-to-one sessions with teachers, they used them frequently. In lab sessions, small group discussions, and one-to-one sessions with students, webcam use was moderate. These findings agree with previous studies (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Dixon & Syred, 2022; Gherheş et al., 2021; Rajab & Soheib, 2021) that found many students are reluctant to use webcams during online teaching. However, earlier research did not focus on differences between session types; this study found that webcam use varies significantly depending on the type of OTSs. Reasons such as peer behavior, group size, and teacher expectations appear to influence these decisions showing the importance of the type of OTSs in shaping webcam use. Interestingly, many participants reported that their teachers often had their webcams on and most preferred this. This suggests that while students value a visual connection with teachers, they may feel less pressure to use their own webcams.

This study shows that the main challenge in online teaching for UK students was less interaction. While this may seem like a social issue, technical problems also played a part. Many students mentioned technical problems as challenging in using videoconferencing. Similarly, the National Student Survey (2021) reported that students faced technical issues, such as problems with IT facilities and online resources. These technical problems may have added to the issue of less interaction that affects students' overall teaching experience.

RQ3 investigated participants' experiences and concerns about privacy and security in online teaching. Although participants gave low ratings of concern about privacy and security devices, the follow-up open-ended question indicated a substantial number of participants expressed concerns related to privacy and security, about both institutional and personal devices. Their concerns related to institutional devices focus on their perceptions of institutional security especially about shared machines. This shows a potential need for institutions to provide clearer information and communication about the security measures they have in place to protect students' privacy and data, as students may not fully understand or trust the existing safeguards.

While participants rated their concerns about videoconferencing and chat technologies as low, the follow-up open-ended question revealed detailed concerns. For example, being recorded without permission, having unauthorized people in teaching sessions possibly disrupting the sessions, and a lack of trust in the institution or the technology. Interestingly, no participant reported an actual instance of unauthorized individuals disrupting their sessions. These concerns may have been fuelled by media reports of this happening, which were frequent since the pandemic, and it is not clear how frequent this problem was in reality. This indicates the importance of institutions providing accurate and transparent information to alleviate unfounded fears.

Another interesting finding was the limited awareness of institutional policies about online privacy and security. Less than one-third of participants knew whether their HEI had such policies, and only two had received any training. As discussed in the literature review (see Section 2.6), clear policies on online privacy and security are essential. While data protection laws, like the European Union's GDPR, provide a framework, more specific guidance is needed to address the unique privacy and security challenges faced by students and educational institutions. It is clear that HEIs needed to move very rapidly to deploy online technologies for teaching in response to the pandemic, but participants completed my questionnaire in December 2021, when HEIs in the UK were still largely teaching in a hybrid format, often with online lectures but face-to-face seminars and practical sessions⁵ but had had

⁵ My supervisor conducted an informal survey in May 2002 of how UK universities were teaching in December 2021. She asked a question on the mailing list of the Council of Professors and Heads of Computing in UK universities about how their institutions had been teaching in Autumn Term 2021. 18 members replied and 15 (83%) stated that their institution was teaching in hybrid format, with 17% (3) teaching largely face-to-face at that point.

ample time to publicize policies and provide students with appropriate training and support. Such information and training would help students not only in their education but more generally in their online lives.

Participants' ratings of concern were also very low regarding privacy and security issues in different online activities, apart from those relating to the monitoring of examinations they were not concerned about the many potential privacy and security issues. However, it was interesting that in the responses to the follow-up open-ended questions, a substantial minority of participants then raised numerous concerns. However, this discrepancy between the ratings and the open-ended question responses shows the importance of not relying on quantitative data alone, which may have been susceptible to socially desirable answers (Müller, Sedley, & Ferrall-Nunge, 2014).

This apparent lack of concern by participants is somewhat at odds with studies that have shown concerns among the working population about online privacy and security issues (Emami-Naeini et al., 2021, Oesch et al., 2020). This raises two possible questions: Do students trust their institutions more than workers trust their employers? Or are students simply less worried about these issues when they are in an educational context? In addition, the results also differ from the findings of Kim (2013), as discussed in the literature review (see section 2.1.3). Kim's study conducted well before the pandemic in a country without GDPR, found that USA HEI students tended not to believe that their personal information was adequately protected by their institution. This contrast shows the need to consider how different contexts, regulations, and periods might influence students' perceptions of privacy and security.

Although I did not specifically ask participants whether they had personally experienced any of the privacy and security issues asked about in the questionnaire, analysis of the open-ended questions suggests that very few participants had actual experience with the issues they were concerned about but had heard or thought about these issues. There were numerous uses of hypothetical phrases such as "people taking photos could be a concern...." (UK-S63) and "I would be uneasy if ..." (UK-S55). This further supports the need for institutions to provide greater transparency and clear information about privacy and security policies, as concerns like "Zoombombing" or unauthorized use of webcams or microphones could often be mitigated through better communication.

The study had two main limitations that should be commented on. Firstly, while the sample size of 71 students from various UK HEIs was very adequate for quantitative analysis, the amount of data for qualitative analysis was relatively small. Most of the open-ended questions were optional to avoid making the questionnaire too burdensome for participants to respond to. As a result, some participants who had concerns might not have shared them, leading to a smaller proportion of participants reporting concerns than actually had concerns. Future research should aim to collect a

larger and more detailed qualitative dataset, possibly through interviews, to gain a deeper understanding of students' concerns.

Secondly, the results relied on the honesty and accuracy of the participants' self-reports. Accurately answering largely rating-based items might have been challenging for some participants. Self-reporting can sometimes lead to biases such as social desirability bias (Müller, Sedley, & Ferrall-Nunge, 2014). There is a need for research using other methods, such as interviews and comparing with objective information such as logging data of webcam use (though this may raise serious ethical issues), to provide a more comprehensive understanding of the issues. These methods could help verify self-reported data and offer more nuanced insights into students' behaviours and attitudes.

In conclusion, this study explored UK HEI student's experiences and concerns about privacy and security in online teaching before and since the pandemic. The transition from face-to-face to fully online teaching due to the pandemic impacted the majority of UK HEI participants, leading to mixed responses. While some appreciated the flexibility and convenience, others faced challenges with practical lessons, group work, less interaction and social isolation. Webcam use among UK students varied depending on the type of OTSs. UK students were generally less concerned but still raised issues such as being recorded without permission, having unauthorized people in teaching sessions possibly disrupting the sessions, and a lack of trust in the institution or the technology. Participants were aware of the privacy and security procedures for their online submissions, but they had limited awareness of their institution's policies about online privacy and security. While UK HEIs quickly adopted online technologies since the pandemic, ongoing concerns call for greater transparency and communication. This study sets the stage for the next chapter, which will investigate similar concerns among students in KSA HEI.

Chapter 4: Study 2: Privacy and Security in Online Teaching: Experiences and Concerns of Students in KSA Higher Education Institutions Before and Since the Pandemic

4.1 Introduction

Building on the previous chapter's exploration of privacy and security concerns among UK students in online teaching before and since the pandemic, this chapter shifts focus to KSA students. It investigates how students in KSA HEIs experienced the transition to online teaching and their concerns about online privacy and security before and since the pandemic.

The study investigated the following research questions:

RQ1: How did KSA HEI students experience the move to online teaching due to the pandemic?

RQ2: How have KSA HEI students used devices and technologies in online teaching, before and since the pandemic?

RQ3: What are KSA HEI students' concerns about privacy and security in online teaching?

4.2 Method

4.2.1 Design

The study used an online questionnaire and sampled from KSA HEI students. For this study, I chose to sample the same cohorts of KSA students (i.e., those studying at an HEI in the KSA as in the previous study). The choice of one country was made for several reasons. As a native of Saudi Arabia, I understand the KSA cultural context that shapes students' perceptions of online privacy and security. Educational practices in HEIs can also vary between different countries. But most importantly, students from different cultures may have different attitudes to online privacy and security, and students in an Arab culture may have particular concerns about privacy and security in online teaching

situations. In addition, there is a gap in the research: I could not find research about KSA students' concerns about privacy and security in online teaching. This study will address this gap.

The online questionnaire was the same as that used for UK HEI students (see section 3.2.1). However, to ensure linguistic appropriateness for the Saudi context, the questionnaire was translated into Arabic by a PhD student at the University of York and then back-translated to an English specialist in English translation to check the accuracy of the translation.

4.2.2 Participants

370 students responded to invitations to the questionnaire, but 306 had not started studying before the pandemic, thus they were excluded and two participants failed the attention check questions (Section 3.2.3), leaving a sample of 62 participants. Demographic information for the participants is shown in Table 4.1.

Table 4.1 Demographic information for the KSA HEI students' participants in Study 2

Age	
Range	19 – 44 years
Mean	24.9
Standard deviation	5.1
Gender	
Men	18 (29.0%)
Women	38 (61.3%)
Prefer not to say	6 (9.7%)
Degree level	
Bachelor	50 (80.6%)
Masters	1 (1.6%)
PhD	9 (14.5%)
Other (e.g. Higher Diploma)	2 (3.2%)
Academic year started	
2019 - 2020	24 (38.7%)
2018 - 2019	13 (21.0%)
2017 - 2018	15 (24.2%)
Earlier	10 (16.1%)
Subject being studied	
Arts/Humanities	6 (9.6%)
Administrative and Financial sciences	7 (11.2%)
CS and Engineering	33 (53.0%)
Medical and Health Sciences	14 (22.0%)
Social sciences (e.g. psychology, sociology)	2 (3.2%)

The age range of the KSA participants was wide (19 - 44 years), but 40 participants (64.5%) were 25 years or younger and 7 (11.3%) were 30 or younger. As with the UK student sample, the KSA sample was slightly skewed toward women (61.3% female).

Participants were studying at 20 different KSA HEIs, representing every type of HEI from the elite universities (King Saud University and Princess Nora bint Abdul Rahman University) to the newer HEIs. Three-quarters of participants were studying at public HEIs (75.0%) but more than a quarter studying at private institutions (25.0%). Over 80% of students are enrolled in bachelor degrees, the remainder for higher degrees. The distribution of degree levels is quite close to the overall KSA HE population (General Authority for Statistics, Kingdom of Saudi Arabia, 2019). There was an over-representation of participants studying CS, health science, arts and humanities and administrative and financial sciences and an under-representation of students studying social sciences (e.g. psychology, sociology). I was unable to find statistics on the distribution of KSA HEI students by discipline, age, or major teaching subjects, so it is impossible to assess how representative the sample is, however, it did include participants studying a wide range of subjects in both the sciences and humanities, similar to the UK sample.

4.2.3 Online Questionnaire

The questionnaire was deployed in Qualtrics as with the UK students' questionnaire. KSA participants had the option of completing either the English or Arabic version using the Qualtrics language function. The UK questionnaire was translated into Arabic by a PhD student at the University of York fluent in English and Arabic and then back-translated into English by a specialist in English translation.

A pilot study was conducted with five KSA undergraduate CS students to check the clarity of the questions and the time required to complete the questionnaire. Some minor adjustments were made, including refining question-wording and clarifying instructions.

The full questionnaire can be found in Appendix B2.

4.2.4 Procedure

The study took place in December 2021. Recruitment for the study was undertaken by posting invitations on my personal social media accounts (e.g. Facebook, Twitter, and LinkedIn), and by emailing colleagues in a range of KSA HEIs for help in sharing the invitation on their platforms, to maximize participation and obtain a diverse sample of students. Potential participants who did not meet the inclusion criteria or who failed the attention check questions were still compensated for completing the questionnaire.

All participants were given an information sheet about the study's aims and how their responses would be processed and stored. To incentivize participation, a draw was offered for one of 10 Amazon gift vouchers, each worth 50 Saudi riyals (approximately GBP 10.00, USD 13.30), for completing the questionnaire.

4.2.5 Data Analysis

The data analysis was undertaken in the same way as for the UK questionnaire (see section 3.2.5). For qualitative data, I first translated each response into English.

4.3 Results

As with the UK questionnaire, participants were initially asked to describe what online privacy and security meant to them in their own words. Just over half the participants (33/62, 53.2%) provided answers to this non-compulsory question. The thematic analysis of responses is summarised in Table 4.2.

One-third of participants (11, 33.3%) produced circular definitions by using the term "secure" (or close variations), and approximately one-fifth of the participants (7, 21.1%) used "private" (or close variations). Some participants introduced other concepts, such as ensuring data cannot be hacked (5, 15.1%), their data being inaccessible except to those authorized (4, 12.2%), maintaining data confidentiality (4, 12.1%) and preventing data from being shared without permission (2, 6.0%).

Table 4.2 Participants' understanding of online privacy and security (N =33)

THEME /Sub-theme	Examples
SECURE (Mentioned by 11 participants, 33.3%)	
Data/information	to keep my information, secure so that no one can see it (KSA-S4)
	secure of data and contact information (KSA-S29)
PRIVATE (Mentioned by 7 participants, 21.1%)	
Data/information	my information is private, and everything related to me (KSA-S38)

	Keep my information completely private (KS-S20)
HACKED (Mentioned by 5 participants, 15.1%)	
Data cannot be hacked	ensure that my personal information will not be hacked (KSA-S36)
NOT ACCESSIBLE (Mentioned by 4 participants, 12.2%)	
Unauthorised persons are not able to access data	you can only access my data with my permission (KSA-S21)
CONFIDENTIALITY (Mentioned by 4 participants, 12.1%)	
Keeping data confidentiality	confidentiality of my online information. (KS-S40)
NOT SHARED (Mentioned by two participants, 6.0%)	
Data cannot be shared.	Do not share or use my entered data for anything without my knowledge. (KS-S23)

4.3.1 KSA HEI students' experience the move to online teaching due to the pandemic (RQ1)

Participants were asked whether their teaching before the pandemic was totally online, totally face-to-face, or blended. 34 participants (54.8%) reported that it had been face-to-face and 28 (45.2%) blended teaching. In response to the pandemic, teaching for the majority of participants (40, 64.5%) moved totally online (see Table 4.3). Participants whose teaching did not move totally online were mainly in medical and health sciences. Approximately one-third of the participants (21, 29.6%) changed from face-to-face teaching to fully online teaching. However, slightly more than a quarter of the participants (19, 26.8%) moved from a blended format to fully online teaching. These students likely found the change easier because they had prior experience of online teaching before the pandemic.

Table 4.3 Modes of teaching change in response to the pandemic

Modes of teaching before the pandemic	Move totally online	Move partly online	Total
Face-to-face	21 (61.8%)	13 (38.2%)	34 (100%)
Blended	19 (67.9%)	9 (32.1%)	28 (100%)
Total	40 (64.5%)	22 (35.5%)	62 (100%)

In a follow-up open-ended question, nearly a quarter of participants (14/62, 22.5%) provided their experiences of online teaching since the pandemic. The thematic analysis of responses is summarized in Table 4.4. More than half of the participants who provided answers (8/14, 57.1%) identified negative aspects on the shift to online teaching. Five of these participants (5/8, 62.5%) had difficulty with focusing and engaging during OTSs. While three of the participants (3/8, 37.5%) mentioned technical difficulties. Positive experiences were reported by nearly one-third of the participants who answered (5/14, 35.7%) and mentioned different concepts. Four participants (4/5, 80.0%) found attending online classes from any location to be easier than in-person classes. One participant (KSA-S9) mentioned that online teaching was less expensive: “studying from a distance is better and less expensive, especially since I live in another city far from the university’.’ One of the participants (1/14, 7.0%) reported ambivalent experiences (KSA-S62), saying “Online teaching is a double-edged sword; it was a good and a bad experience at the same time.”

Table 4.4 Participants experience of moving to online teaching since the pandemic (N=14)

THEME /Sub-theme	Examples
NEGATIVE ASPECTS OF THE SHIFT TO ONLINE TEACHING (Mentioned by 8 participants, 57.1%)	
Difficulty focusing and engaging	Difficult to focus and engage during the lecture.... which negatively affected my grade (KSA-S38)
5 (62.5%)	Online learning was an inevitable solution, but from my point of view, I did not prefer it because of the difficulty on focus and attendance (KSA-S48)
Technical Issues	I had difficulty accepting the new way of studying and dealing with technical problems. (KSA-S17)
3 (37.5%)	Internet problem (KSA-S40)
POSITIVE ASPECTS OF THE SHIFT TO ONLINE TEACHING (Mentioned by 5 participants, 35.7%)	
Convenience and Flexibility	Distance learning has made it easier, and its presence is useful even after the pandemic. (KSA-S3)
4 (80.0%)	It was a very nice experience in terms of overcoming the pressures of studying (KSA-60)

Participants rated their level of experience with different types of teaching before and since the pandemic (see Table 4.5). Comparing the two periods, students' experiences with lectures (whether live or recorded) and small group discussions remained consistent. For the other three types of teaching, participants' ratings significantly decreased since the pandemic.

Table 4.5 Participants who experienced different types of teaching before and since the pandemic (from “Never” scored as 1 to “Very frequently” scored as 7) (N=62)

Types of teaching	Before the pandemic Median (SIQR)	Since the pandemic Median (SIQR)	Z	p
Lectures (live or recorded)	5.70 (2.18)	5.80 (2.21)	0.18	n.s.
Small group discussions/seminars	4.70 (3.53)	4.50 (2.74)	-3.36	n.s.
Lab sessions (e.g. chemistry or computer labs)	4.60 (2.68)	3.50 (2.76)	-2.70	<.001
One-to-one sessions with teachers	4.60 (2.53)	3.30 (2.63)	-3.16	<.001
Fieldwork (i.e. sessions away from the institution)	3.30 (2.54)	2.70 (2.45)	-1.98	<.001

Participants rated their typical level of participation (e.g. asking questions, contributing to discussions, interacting with the teacher or other students) in the different types of teaching (Table 4.6) before and since the pandemic. For all five types of teaching, participants' ratings did not significantly differ before and since the pandemic.

Table 4.6 Participants ratings of their level of participation in the different types of teaching before and since the pandemic (from “Never” scored as 1 to “Very frequently” scored as 7) (N=62)

Types of teaching	Before the pandemic Median (SIQR)	Since the pandemic Median (SIQR)	Z	p
Lectures (live or recorded)	4.50 (2.62)	4.30 (2.53)	0.79	n.s.
Small group discussions/seminars	3.70 (2.59)	4.40 (2.17)	1.08	n.s.
lab sessions (e.g. Chemistry or computer labs)	4.70 (2.65)	3.60 (2.45)	0.48	n.s.
One-to-one sessions with teachers	3.60 (2.76)	4.00 (2.66)	0.70	n.s.
Fieldwork (i.e. sessions away from the institution)	3.80 (2.68)	3.70 (2.51)	-.74	n.s.

Participants were asked if since the pandemic their level of participation was lower if they knew the session was being recorded for later viewing (from “Not at all” scored as 1 to “Very much”

scored as 7). Participants' ratings were not significantly different from the midpoint of the scale (N = 62, Median: 4.00, SIQR 2.00, One sample Wilcoxon Signed Rank Test, Z = 0.13, n.s.).

In a follow-up to the open-ended question, only 12.9% of participants (8/62) described how their level of participation was affected if the session was recorded. Four of the participants (50.0%) reported their level of participation was lower due to being embarrassed if they answered incorrectly while being recorded: "I am ashamed of my mistakes. It passes, and it is normal, but in the recording, I am embarrassed again" (KSA-S18). Four of the participants (50.0%) reported that their level of participation was not affected if the sessions were recorded: "There was no major change. My participation and interaction were equal whether the session was recorded or not" (KSA-S15).

Participants were asked whether they submitted their work online in three different assessment types before and since the pandemic, (see Table 4.7). For online exams, the frequency of online submission has significantly increased since the pandemic, while for formative assessments and formal assessments, the frequency has remained the same.

Table 4.7 Frequency of submitting work online ("Never" scored as 1 to "Very frequently") (N=62)

Assessment types	Before the pandemic Median (SIQR)	Since the pandemic Median (SIQR)	Z	p
Formative assessments (for feedback only)	5.10 (2.30)	5.40 (2.21)	0.79	n.s.
Summative assessments (marked)	5.80 (2.07)	6.10 (1.75)	1.09	n.s.
Online exams	4.40 (2.64)	5.70 (2.15)	3.74	<.001

In a follow-up open-ended question, participants were asked whether they knew the procedures by which their institutions ensured the privacy and security of work submitted online. Less than a quarter of participants (9/62, 14.51%) described different procedures. A thematic analysis of these procedures is summarised in Table 4.8. The most frequently mentioned procedure (5/9, 55.5%) was that participants submitted their work through VLEs such as Blackboard. Three of the participants (3/9, 33.3%) submitted work through the university website which they assumed would be safe and secure. One participant mentioned submitting their work via email. In another open-ended question, participants were asked whether any procedures have been put in place or changed to ensure the privacy and security of any work they submit online since the pandemic. Less than a quarter of participants (11/62, 17.7%) answered this question by saying that there was no change in the procedures since the pandemic.

Table 4.8 Procedures used to ensure the privacy and security of any work participants submitted online before the pandemic (N=9)

THEME/Examples
SUBMITTED THROUGH VLEs (Mentioned by 5 participants, 55.5%)
Delivered via the Blackboard platform and not via email or any other means. (KSA-S8)
SUBMITTED WORK THROUGH THE UNIVERSITY WEBSITE (Mentioned by three participants, 33.3%)
The works are submitted directly to the university's website, and it is protected (KSA-S11)

Participants were asked to describe the main challenges they faced in online teaching since the pandemic. A majority of participants (38/62, 61.3%) did report challenges. A thematic analysis of the challenges is presented in Table 4.9. The most frequently mentioned challenge (16/38, 42.1%) related to their Internet connection being slow. 15.8% of participants (6/38) mentioned a lack of understanding of their teacher's explanations. Less frequently mentioned challenges (raised by 10% of participants each) included miscommunication with their teachers, keeping focused during OTSs, lack of resources and reduced hands-on practice sessions.

Table 4.9 Participants' challenges in online teaching since the pandemic (N=38)

THEME/Examples
INTERNET CONNECTION (Mentioned by 16 participants, 42.1%)
The problems of the Internet and the pressure on it due to a large number of users at home...(KSA-S12)
Internet connection (KSA-S28)
LACK OF UNDERSTANDING OF THEIR TEACHER'S EXPLANATION (Mentioned by 6 participants, 15.8%)
Poor delivery of information during the lecture (KSA-S19)
MISCOMMUNICATION WITH THEIR TEACHERS (Mentioned by 4 participants, 10.0%)
Missing communication between the lecturers and students (KSA-S5)
KEEPING FOCUSED (Mentioned by 4 participants, 10.0%)
To stay focused (KSA-S33)
LAKE OF RESOURCES (Mentioned by 4 participants, 10%)

Difficulty accessing information (KSA-S38)
Lack of capabilities and resources for effective online learning (KSA-S39)
REDUCED HANDS-ON PRACTICE (Mentioned by 4 participants, 10.0%)
Practical materials that need our presence directly with Dr (KSA-S7)

4.3.2 KSA HEI students' experience the devices and technologies used in online teaching before and since the pandemic (RQ2)

Participants rated the frequency of their use of different devices in online teaching, whether they were institution-supplied or personal devices (see Table 4.10). Before the pandemic, the use of institution-provided smartphones and desktops was significantly higher than since the pandemic. For the other device types, there is no significant difference in frequency of use between before and since the pandemic.

Table 4.11 shows the comparison of the ratings of use for the four different devices, institutional and personal devices separately, and both before and since the pandemic. There were significant differences in device use in all four comparisons. Before the pandemic, desktops and smartphones were used significantly more frequently than laptops, and tablets. For personal devices, tablets and desktops were used significantly more than laptops and smartphones. Since the pandemic, for institutional devices, desktops have been used significantly more than laptops, smartphones, and tablets. For personal devices, tablets and desktops have been used significantly more than laptops and smartphones.

Table 4.10 Ratings of frequency of devices used in online teaching before and since the pandemic (from "Never" scored as 1 to "Very frequently" scored as 7) (N=62)

Derives	Before the pandemic Median (SIQR)	Since the pandemic Median (SIQR)	Z	p
Institutional				
Desktop	6.00 (3.00)	1.00 (3.00)	-1.75	<.001
Laptop	1.00 (3.00)	1.00 (3.00)	-1.12	n.s.
Tablet	1.00 (3.00)	1.00 (2.00)	-1.45	n.s.
Smartphone	6.00 (3.00)	1.00 (3.00)	-2.99	<.001
Personal				

Desktop	7.00 (3.00)	7.00 (3.00)	0.88	n.s.
Laptop	7.00 (0.00)	7.00 (0.00)	0.94	n.s.
Tablet	7.00 (3.00)	7.00 (2.50)	0.88	n.s.
Smartphone	7.00 (0.00)	7.00 (0.00)	1.16	n.s.

Table 4.11 Comparison of different devices used for institutional and personal devices, before and since the pandemic (N=62)

Before the pandemic	Friedman's	Post hoc
Institutional	Q = 18.24 p < 0.001	Desktop / Smartphone > Laptop / Tablet
Personal	Q = 15.60 P < 0.001	Tablet / Desktop > Laptop / Smartphone
Since the pandemic		
Institutional	Q = 13.37 p < 0.001	Desktop > Laptop / Smartphone / Tablet
Personal	Q = 17.90 p < 0.001	Tablet / Desktop > Laptop/ Smartphone

Participants were asked whether they used videoconferencing technologies (e.g. Blackboard Collaborate, Microsoft Teams, Zoom) before the pandemic. 46 participants (74%) used these technologies, with 6 participants (9.7%) reporting not being sure, and 10 participants (16.1%) reporting that they did not use them. Since the pandemic, nearly all participants (90.3%) have used videoconferencing technologies.

Participants were asked about the challenges of using videoconferencing technologies in online teaching since the pandemic. Less than a quarter of the participants (14/62, 22.6%) raised challenges. A thematic analysis of these challenges is summarised in Table 4.12. Half of these participants (7/14, 50.0%) faced internet connection problems, four (4/14, 28.5%) had difficulty in using videoconferencing technologies, a small number mentioned reliability and availability without specific details, maintaining privacy, and leaking information (one participant each).

Participants were asked about the challenges of using videoconferencing technologies in teaching since the pandemic, and nearly a quarter of participants (14/62, 22.6%) provided answers. A thematic analysis of these challenges is summarised in Table 4.13.

Half of these participants (7/14, 50%) mentioned internet connection problems, four (4/14, 28.57%) had difficulty in using videoconferencing technologies, and a small number mentioned reliability and availability, maintaining privacy, and preventing information leaks (one participant each).

Table 4.12 Participants' challenges with using videoconferencing technologies since the pandemic (N=14)

THEME/ Examples
INTERNET CONNECTIONS (Mentioned by 7 participants, 50%)
Network problem (KSA-S29)
DIFFICULTY IN USING VIDEOCONFERENCING (Mentioned by 4 participants, 28.5 %)
Don't know how to use it (KSA-S23)

Participants rated how often they turned on their webcam during different types of OTSs (see Table 4.13). In all cases, they rated the frequency of turning their webcam on as “never”, significantly below the midpoint of the rating scale.

Table 4.13 Frequency of turning the webcam on during different types of OTSs (from “Never” scored as 1 to “Very frequently” scored as 7) (N=62)

Types of OTSs	Median (SIQR)	Z	p
Online lectures	1.00 (2.04)	-4.55	< .001
Small group sessions/seminars	1.00 (2.16)	-4.51	< .001
Lab sessions (e.g. chemistry, biology, or computer labs)	1.00 (2.05)	-4.25	< .001
One-to-one sessions with your teachers	1.00 (2.48)	-3.28	< .001
Online study sessions with other students	1.00 (2.00)	-4.55	< .001

In a follow-up, open-ended question, only four of the participants (6.5%) described why they decided to turn on their webcam during different types of OTSs. Three of the participants mentioned that they turn on their webcam if their teachers ask them. The other participant mentioned that they turned on their webcam only if they had an online exam.

Participants rated their perception of the teacher having a webcam on during different OTSs (see Table 4.14). In all four online teaching situations, the ratings were significantly below the midpoint of the rating scale. In a follow-up open-ended question, less than a quarter of participants (11/62, 17.7%) expressed their opinion about whether their teachers should have their webcams on or not. Three participants preferred their teachers to have their webcams on because they felt they understood the teacher better in those circumstances and that it facilitated communication. Two participants preferred their teachers to have their webcams off because they felt distracted by looking at the teacher during online sessions. One participant mentioned that they considered this as an aspect of their teacher's privacy, and they did not like to infringe on this. Five participants (45.5%) stated that they did not care or were indifferent to whether their teachers had their webcam or not.

Table 4.14 Frequency of participants perceiving their teacher as having their webcam on during different types of OTSs (from "Never" scored as 1 to "Very frequently" scored as 7) (N=62)

Type of OTSs	Median (SIQR)	Z	p
Online lectures	1.00 (2.23)	-2.76	< .001
Small group sessions/seminars	1.00 (2.43)	-2.96	< .001
Lab sessions (e.g. chemistry, biology, or computer labs)	1.00 (2.32)	-3.22	< .001
One-to-one sessions with students	1.00 (2.25)	-3.50	< .001

Participants were asked about their use of online chat technologies for synchronous and asynchronous communication, both before and since the pandemic. For synchronous communication (e.g., Discord, Facebook Messenger, Slack, Telegram, WhatsApp), before the pandemic 53.2% of participants (33/62) reported using online chat technologies, 38.7% of participants (24 /62) did not and five participants (8.1%) could not recall their use. Since the pandemic, 40.3% of participants (25/62) reported using online chat technologies. Although fewer participants reported using this type of technology since the pandemic, there was no significant change in use before and since the pandemic (McNemar test $\chi^2 = 1.25$, n.s.).

Participants were also asked about using asynchronous communication technologies (e.g. email) before the pandemic. 35.5% of participants (22/62) reported not using such technologies, while 30.6% of participants (19/62) did use them and 33.9% of participants (21/62) could not recall their use. Since the pandemic, 30.6% of participants (19/62) have used these technologies. There was no significant change in use before and since the pandemic (McNemar test $\chi^2 = 0.00$, n.s.).

Participants were asked about the challenges of using online chat technologies in online teaching, (11/62, 17.7%) mentioned challenges. Five of the participants (5/11, 45.4%) mentioned internet connection problems, and three (3/11, 27.3%) mentioned security concerns, such as not being sure that chat technologies were secure and whether a third party could access their personal information through these technologies, or if the technologies provide adequate security from hacking and spying. A small number of participants mentioned the time it takes to receive a reply, the difficulty of ensuring that the information shared is accurate, and the challenge of articulating their thoughts in a way that is fully understood by others (each mentioned by one participant).

4.3.3 KSA HEI students' concerns about privacy and security in online teaching (RQ3)

Participants rated their level of concern about privacy and security when using different devices for online teaching (Table 4.15). Ratings were not significantly different from the midpoint of the scale for institutional devices, with participants rating themselves as having a moderate level of concern in all cases. However, for personal devices ratings of concern were significantly below the midpoint of the scale, with median ratings of only 1.00, meaning students were not at all concerned about privacy and security issues of their own devices.

Table 4.15 Participants' ratings of their level of concern about online privacy and security issues in using the different devices in online teaching (from "Not at all concerned" scored as 1 to "Very concerned" scored as 7) (N=62)

Devices	Median (SIQR)	Z	p
Institutional			
Desktop computer	3.51 (2.64)	-1.55	n.s.
Laptop computer	3.67 (2.66)	-0.99	n.s.
Tablet	3.27 (2.61)	-1.84	n.s.
Smartphone	3.63 (2.60)	-1.04	n.s.
Personal			
Desktop computer	1.00 (2.18)	-4.69	< .001
Laptop computer	1.00 (2.35)	-3.79	< .001
Tablet	1.00 (2.24)	-4.07	< .001
Smartphone	1.00 (2.23)	-4.23	< .001

In a follow-up, an open-ended question, less than a quarter of participants (10/62, 16.1%) raised concerns about privacy and security using different devices in online teaching. The small percentage of participants providing answers to the open-ended question may suggest a general lack of concern about the issues, but I have found in several recent studies with Saudi participants that they seem much more reluctant to answer open-ended questions in online surveys than British participants (a topic for another study), so one should be cautious in drawing that conclusion. A thematic analysis of these concerns is summarised in Table 4.16. The most commonly mentioned concerns by these participants (6/10, 60%) were about devices in general, whether devices belonging to the institution or themselves (or that they did not specify which type of device). Their concerns included their data being hacked (4/6, 66.6%), the devices being infected by viruses (1/6, 16.6%) and the possibility of losing data (1/6, 16.6%). Concerns about using institutional devices were raised by 4 of these participants (4/10, 40%), including personal data stored on these devices (2/4, 50%), the potential for tracking students via the devices (1/4, 25%), and the use of external storage devices such as flash drives (1/4, 25%).

Table 4.16 Participants' concerns about using different devices in online teaching (N=10)

THEME /Sub-theme	Examples
CONCERNS ABOUT BOTH INSTITUTIONAL AND PERSONAL DEVICES, OR NOT SPECIFIED (Mentioned by 6 participants, 60.0%)	
Data hacked 4 (66.6%)	Multiple hacking and cyber-attacks are directed at everyone without exception (KSA-S27)
Losing data 1 (16.6%)	Important and private data lost (KSA-S1)
Viruses 1 (16.6%)	Viruses (KSA-S18)
USING INSTITUTIONAL DEVICES (Mentioned by 4 participants, 40%)	
Data on university devices 2 (50%)	Concerns about whether there is the storage of personal information that is used in my university device (KSA-S40)
Using flash drives 1(25%)	put a personal third-party device such as Flash into a university device, may cause problems (KSA-S57)
Tracking students 1 (25%)	using university devices for continuous tracking of student activity. (KSA-S59)

Participants rated their level of concern about privacy and security when using different devices for teaching (Table 4.17). Ratings were not significantly different from the midpoint of the scale for institutional devices, participants rated themselves as having a moderate level of concern in all cases. However, ratings of personal devices were significantly below the midpoint of the scale, meaning students were not particularly concerned about privacy and security issues of their own devices. The results suggest that participants are more concerned about online privacy and security issues when using institutional devices than when using personal devices for online teaching.

Participants were asked if they knew whether their institution has policies about privacy and security issues about the use of technologies for online teaching (e.g. videoconference systems, online chat systems). Less than half of the participants (26/62, 41.9%) knew of such policies, less than a quarter of the participants (11/62, 17.7%) said they thought the institution did not have any policies, and less than half of the participants (25/62, 40.3%) said they did not know.

When asked whether their institution provides training in online privacy and security issues, nearly one-third of participants (18/62, 29.0%) reported that training was provided, less than a quarter of participants (10/62, 16.1%) reported that it was not provided, and the majority were not sure or did not know (34/62, 54.8%). In a follow-up, open-ended question about any training provided, only seven

participants (7/62, 11.3%) answered. Five of the participants (5/7, 71.4%) had training on how to use video conferencing securely and safely without mentioning more details: “Train how to use videoconferencing blackboard safely” (KSA-S10) One of the participants (1/7, 14.7%) had a lecture about how to be safe during OTSs.: ‘Lectures about online safety and some publications about it’ (KSA-S15 stated).

Participants rated their level of concern about privacy and security issues on the use of videoconferencing and online chat technologies for OTSs and for studying with other students online (see Table 4.17). Ratings for using chat technologies for online teaching were significantly below the midpoint of the rating scale, meaning students were not particularly concerned about privacy and security issues of using chat technologies in online teaching. In the other three cases, ratings were not significantly different from the midpoint, so participants had moderate levels of concern.

Table 4.17 Ratings of concern about online privacy and security about using videoconferencing and chat technologies in activities (from “Not at all concerned” scored as 1 to “Very concerned” scored as 7) (N=62)

Activities	Median (SIQR)	Z	p
Using videoconferencing technologies in teaching	3.40 (2.62)	-1.67	n.s.
Using chat technologies for teaching	2.90 (2.48)	-3.30	< .001
Using videoconferencing for studying with other students	3.40 (2.61)	-1.84	n.s.
Using chat technologies for studying with other students	3.40 (2.60)	-2.83	n.s.

In a follow-up open-ended question about any concerns on this topic, less than a quarter of participants (14/62, 22.6%) raised concerns. A thematic analysis of these concerns is summarised in Table 4.18. The most commonly mentioned concern, raised by five participants (5/14, 37.1%), was leaking personal information to unauthorized people who entered online sessions. Three less frequently mentioned concerns, mentioned by two participants each (2/14, 14.3%) were about the ability of others to know their location from their status on some online chat apps (although it was not explicitly mentioned, this presumably related to the privacy concerns), videoconferencing sessions being recorded without permission, and interruptions by other students making inappropriate racist

or biased comments. Concerns raised by one of the participants each (7.1%), were about knowing whether their camera or microphone was on or off, the lack of guarantee of the safety of other students' devices which may lead to the interruption of the secure connection in the video chat, and other students stealing ideas during discussions in online sessions.

Table 4.18 Themes reflecting participants' concerns about videoconferencing and online chat technologies (N = 14)

THEME/Examples
PERSONAL INFORMATION LEAK (Mentioned by 5 participants, 35.7%)
The ability of unauthorized persons to know my personal information (KSA-S53)
My phone number is known in the online chat (KSA-S25)
LOCATION LEAK (Mentioned by 2 participants, 14.3%)
Ability to know and locate my location if I used WhatsApp in online chat (KSA-S42)
BEING RECORDED WITHOUT PERMISSION (Mentioned by 2 participants, 14.3%)
As for making recordings the issue is worrying in terms of how these recordings will be and whether will they be published on social media (KSA-S40)
INAPPROPRIATE BEHAVIOUR BY OTHER STUDENTS (Mentioned by 2 participants, 14.3%)
The occurrence of interruptions by some students, sabotage, and throwing inappropriate words because there is no system to punish the person for it. (KSA-S37)

Participants rated their level of concern about online privacy and security issues in several specific online teaching situations (see Table 4.19). Two situations, both relating to not having webcams on during online sessions for students and teachers, had ratings significantly below the midpoint of the scale, indicating a lack of concern. Another situation about online lectures or seminars being recorded without their knowledge also had a rating significantly below the midpoint, again suggesting low concern. In contrast, all other situations had ratings not significantly different from the midpoint of the scale indicating moderate levels of concern.

Table 4.19 Ratings of concern about online privacy and security about particular teaching situations (from “Not at all concerned” scored as 1 to “Very concerned” scored as 7) (N=62)

Situations	Median (SIQR)	Z	p
Online lectures/seminars are being recorded without your knowledge	1.00 (2.50)	-2.57	< .001
Other students do not turn on their webcams during online sessions	1.00 (1.50)	-4.69	< .001
Your teacher not turning on their webcam during teaching sessions	1.00 (1.00)	-4.57	< .001
Unauthorized people attending OTSs	3.00 (3.00)	-1.65	n.s.
Unauthorized people interrupting online teaching session	3.00 (3.00)	-1.16	n.s.
Other students making recordings or screenshots without permission	3.00 (3.00)	-.061	n.s.
Your work is being used as examples without your permission	5.00 (3.00)	.006	n.s.
Other students making inappropriate comments (sexist, racist)	5.00 (3.00)	1.16	n.s.
Other students harassing you	4.00 (3.00)	-.079	n.s.
Having to turn on your webcam during an online exam to allow the teacher to monitor you in real time	5.00 (3.00)	-.041	n.s.
Having to video record yourself during online exams so a teacher can review the video later	5.00 (3.00)	-.220	n.s.

In a follow-up open-ended question, less than a quarter of the participants (9/62, 14.5%) raised concerns. A majority of the participants (6/9, 66.7%) were concerned about recording a video during the online exam for later review: “It did happen when we were taking an online exam our institution told us that there would be a smart monitor during the exam, but they did not inform us of

the fact our exam session is recorded and reviewed by our teachers” (KSA-S13). Two of the participants (2/9, 22.2%) were concerned about having on their webcam during online sessions: “[teachers] must respect have student’s privacy and not force them to open the camera” (KSA-S34). Another participant (1/9, 11.1%) was concerned about the use of student work as in other work: “Take screenshots of work and use them as an example or use them in projects as intellectual property theft” (KSA-S24).

4.4 Discussion and Conclusions

This study investigated the experiences and concerns related to privacy and security in the online teaching of KSA HEI students before and since the pandemic. It examined students' experiences with personal and institutional devices, as well as their use of technologies for online teaching such as chat and videoconferencing.

Participants' responses to the question of what “online privacy and security” meant to them showed that they had a limited understanding of these terms or the ability to define them more specifically. Interestingly, their responses did not address how these concepts apply to their activities in online teaching, suggesting a lack of awareness about some important implications of online privacy and security for that area. Although the question did not explicitly refer to online teaching, participants had been informed that the study focused on that topic, so they might have considered this focus. This shows a need for educational programmes to increase students’ understanding of online privacy and security. This would help not only within their educational setting but also in their online interactions in other contexts.

RQ1 investigated the experiences of KSA HEI students with online teaching before and since the pandemic. Participants tended to be more negative about the experience with over half of those who provided an answer offering negative views. The most frequently mentioned negative experiences were difficulties in focusing and engaging with the teaching. While students' experiences with lectures (live or recorded) and small group discussions remained consistent their experiences with labs, one-to-one sessions with teachers, and fieldwork sessions decreased significantly. It is not surprising that the level of lectures has not decreased since the pandemic as lecturers made great efforts to record their lectures or give them live over the internet. Neither is it surprising that students felt that the more interactive types of teaching such as labs, fieldwork and one-to-one sessions all decreased. These were more difficult and sometimes impossible for teachers to organise since the pandemic. What is perhaps surprising is that small group discussions/seminars did not decrease.

When students were asked about the main challenge of online teaching since the pandemic, the most frequently mentioned issue was internet connectivity which was also found as a main

challenge in using videoconferencing and chat technologies. This challenge was not unique to KSA HEI students but was also reflected in global experiences due to the sudden shift to online teaching. As discussed in the literature review (see Section 2.3.2), Bozkurt et al. (2020) found technical challenges including internet connectivity issues as common global issues during the move to online teaching.

An interesting finding related to RQ1 was about the impact of recorded online sessions for later viewing on student participation. Participants reported lower participation levels in sessions that were recorded for later viewing compared to those that were not recorded. They mentioned various factors contributing to this phenomenon including being afraid of saying something incorrectly while being recording a session. This concern was also identified as the main reason for reduced participation levels in such sessions among UK HEI students in Study 1. No research was found exploring how this aspect of student participation. This gap Indicates an area for future research, to further understand the impact of recording sessions on student participation during OTSs. The frequency of online submission of work significantly has increased for online exams since the pandemic, while it remained the same for formative and summative assessments. The increase in online exam submissions by KSA students reflects a broader shift towards online assessment methods in KSA (see Section 2.3.1). This is consistent with the MoE's directives for a swift transition from traditional assessments to online forms especially in final exams.

RQ2 investigated participants' experiences with using institution-supplied and personal devices, along with chat and videoconferencing technologies in online teaching before and since the pandemic. Participants reported a significant decrease in the use of institution-supplied desktops and smartphones reflecting the fact that students were studying from home rather than being on campus. However, somewhat surprisingly the use of personal tablets and desktops remained relatively stable. One might have expected an increase in personal device use as students were studying from home. However, it seems that students were already using their personal devices before the pandemic, and their use patterns have not significantly changed.

Participants reported an increase in videoconferencing use since the pandemic. In contrast, the use of online chat technologies remained stable suggesting they were already used in students' practices. The results also found that KSA students do not have their webcams on during all types of OTSs. Unlike UK students in Study 1, UK students' use of their webcam depended on the type of OTSs. However, the results from KSA students are similar to findings from other cultural contexts, such as Germany, the USA, and Romania (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Gherheş et al., 2021) which showed that many students are reluctant to use webcams during online classes.

Although this reluctance seems common in different countries, cultural values may explain why KSA students have not turned webcams on. In the follow-up open-ended question, some of the KSA participants explained that they only turn on their webcams when teachers ask them to or during online exams. This behaviour may reflect traditional educational values in Saudi Arabia, where respect for authority and teacher control is important (see Section 2.5). As a result, students may wait for their teacher's instruction rather than deciding independently to turn on their webcams. More research is needed to better understand KSA students' reasons for not turning webcams on during OTSs as the number of responses in the follow-up open-ended question was limited.

RQ3 investigated the experiences and concerns of KSA HEI students about privacy and security in online teaching. In relation to devices, participants were more concerned about privacy and security issues when using institutional devices compared to personal ones suggesting students perceive institutional devices as potentially riskier. Although only a small percentage of participants raised concerns in response to open-ended questions, data hacking was a common concern for both personal and institutional devices. Personal data stored on institutional devices, tracking, and third-party device use were also frequent concerns for institutional devices. These concerns reflect a general lack of trust in devices provided by HEIs. This distrust likely comes from the shared nature of these devices or the lack of clear policies about their privacy and security.

Participants showed diverse levels of privacy and security concerns about the use of videoconferencing and chat technologies, depending on the technology and use context. Participants were not particularly concerned about using chat technologies for OTSs. However, in the other three activities, including using videoconferencing for online teaching, studying with other students, and using chat technologies for studying with other students, students rated their level of concern as medium. One reason for this could be the differences in the type and level of communication and interaction involved in each situation. For instance, when using chat technologies for teaching, the communication may be limited to the exchange of course materials or assignment submissions, which may not involve sharing personal or sensitive information. In contrast, videoconferencing for teaching or studying with other students may involve more personal interaction, including face-to-face conversations which may increase the risk of privacy breaches or unauthorized access. Similarly, when using chat technologies for studying with other students, students may discuss personal or sensitive information which could raise their concerns about the platform's privacy and security. These suggested levels of privacy and security concerns may depend on the degree of personal interaction and information sharing involved.

When communication is more controlled and limited, such as when using chat technologies for teaching, the level of concern may be lower. However, when interaction and sharing are more

personal, the level of concern may increase. The results suggest that students are somewhat aware of potential risks associated with online communication technologies. While the quantitative analysis showed that participants did not have high levels of concern, the follow-up open-ended question revealed that a considerable percentage of participants had some concerns. This shows the importance of not relying on quantitative data alone, which in this instance may have been susceptible to socially desirable answers (Müller, Sedley, & Ferrall-Nunge, 2014). This moderate level of concern among KSA HEI students agrees with findings from previous research (see Section 2.6). Rashidi et al. (2016), for example, showed that even before the pandemic, KSA users were aware of privacy concerns when using chat technologies. This indicates a consistent awareness of privacy issues across different contexts and periods among KSA users.

Nearly half of the participants were aware of their HEI's policies on online privacy and security, while about one-third had received any training in this area. These results show that KSA HEIs are making efforts to train their students on online privacy and security. In addition, institutions need to encourage students to actually take the training provided and inform themselves well about online privacy and security issues, as the percentage of students who reported were not sure or did not know was high. Clear policies on online privacy and security are essential for HEIs (see Section 2.6). While the Saudi Personal Data Protection Law (PDPL) provides a foundational framework, more specific guidance is needed to address the unique privacy and security challenges faced by students and educational institutions. Participants showed different levels of concern about privacy and security in online teaching. They were not very concerned about not using webcams during sessions or about lectures and seminars being recorded without their knowledge. However, they were moderately concerned about issues like online exams being recorded and their work being used as examples without permission. In a follow-up open-ended question, although few gave specific details, many were especially concerned about online exams being recorded for later review. It is important to clearly explain policies and address these concerns to create a safe and respectful OTE.

The KSA study had two limitations that need to be addressed, similar to Study 1 (see Section 3.4). First, there is the potential for socially desirable responses meaning that participants might have answered in ways they thought were acceptable rather than reflecting their true views. Second, some participants were not motivated to answer the open-ended questions which may have limited the depth of qualitative insights.

In conclusion, this study explored KSA HEI students' experiences and concerns about privacy and security in online teaching before and since the pandemic. The main challenges faced by students due to the move to online teaching were staying focused and engaged, and dealing with technical problems. Like students in many other countries, KSA students did not have their webcams on, which

is somewhat different from UK students. Participants showed moderate levels of concern about privacy and security in online teaching raising issues such as leaking personal information to unauthorized people. These results show the need to improve data protection and make policies that respect cultural differences to help students in online teaching.

Chapter 5: Study 3: Privacy and Security in Online Teaching: Experiences and Concerns of Teachers in UK Higher Education Institutions Before and Since the Pandemic

5.1 Introduction

As discussed in the literature review (Section 2.3.2), some previous research has examined UK HEI teachers' experiences with technology in online teaching since the pandemic (Crick et al., 2022; Nicklin et al., 2022). However, there is a research gap in addressing UK HEI teachers' privacy and security concerns in online teaching during this period and comparing it to the situation before the pandemic. Study 1 explored the experiences and concerns of UK HEI students of privacy and security before and since the pandemic. The current study allows a comparison between teachers' and students' experiences and concerns.

The study investigated the following research questions:

RQ1: How did UK HEI teachers experience the move to online teaching due to the pandemic?

RQ2: How did UK HEI teachers experience the technologies used in online teaching, before and since the pandemic?

RQ3: What are UK HEI teacher's concerns about privacy and security in online teaching?

5.2 Method

5.2.1 Design

The study used an online questionnaire and sampled teachers from British HEIs. As with the previous studies with students, sampling from a particular country allowed me to compare both teachers in two very different countries (Chapter 6 will present a parallel study with KSA teachers) and compare teachers and students.

The questionnaire was very similar to the student questionnaire. The questionnaire covered various aspects of teachers' experiences with online teaching and their use of technologies before and since the pandemic. It also investigated teachers' concerns about privacy and security issues in online teaching. The main areas explored were:

Experiences with online teaching before and since the pandemic:

- Modes of teaching used before the pandemic
- Changes in modes of teaching in response to the pandemic
- Levels of student participation in different types of online teaching
- Practices for students to submit work online
- Main challenges faced with online teaching.

Experience the devices and technologies used in online teaching, before and since the pandemic:

- Use of technologies for online teaching, such as videoconferencing and online chat (synchronous and asynchronous).
- Use of webcam during various OTSs and their perceptions of their students' webcam use.
- Main challenges faced with technologies used in online teaching.

Privacy and security concerns in online teaching:

- Use of devices and technologies, including institution-supplied and personal devices, videoconferencing, and chat technologies
- Awareness of institutional policies and the training provided.
- Specific privacy and security concerns in various online teaching situations.

The questionnaire used a combination of rating items, multiple-choice questions, and open-ended questions to gather data. Rating items and multiple-choice questions were mandatory, while open-ended questions were optional.

The questionnaire included two 'attention check' questions, similar to those used in the UK student survey (see Section 3.2.3). The study received ethical approval with reference number (Almekhled20211026) from the Physical Sciences Ethics Committee of the University of York.

5.2.2 Participants

60 teachers responded, but data from 21 were discarded because they did not meet the criteria of completing at least 75% of the questionnaire. Two participants failed the attention check questions,

leaving a sample of 37 participants. Demographic information for the participants is shown in Table 5.1.

Table 5.1 Demographic information for the UK HEI teacher participants in Study 3 (N = 37)

Age	
Range	32-66
Mean	32.32
Standard deviation	22.10
Gender	
Men	14 (37.8%)
Women	13 (35.1%)
Prefer not to say	7 (18.9%)
Prefer to self-identify	3 (8.1%)
Highest level of education	
Masters	3 (8.1%)
PhD	28 (75.7%)
Years of teaching experience	
1 year to 5 years	7 (18.9%)
6 years to 10 years	9 (24.3%)
11 years to 15 years	2 (5.4%)
More than 15 years	10 (51.4%)
Subject teaching	
Administrative/Business Studies	14 (37.8)
Arts/Humanities	2 (5.4%)
Architecture	7 (18.9%)
CS/Engineering	3 (8.1%)
Medical/Health Sciences	10 (27.0%)
Social Sciences	1 (2.7%)

The age range of participants was wide, 11 participants (29.8%) were aged 55 and over and 26 (70.27%) were 32 and over. However, the distribution of ages is not close to the overall UK higher education population of HEI academic staff. Information from the Higher Education Statistics Agency (HESA, 2021/22) shows that 3% of academic staff are 25 or younger and 19% of academic staff are aged 56 and over. Thus, my sample is somewhat older than typical.

The gender distribution was reasonably balanced, highly educated and with general long experience of teaching. Participants were teaching at 16 different UK HEIs, representing every type of HEI from the elite universities (Oxford and Cambridge) to the newer HEIs. Most participants were teaching at HEIs in England (25, 67.6%), but with participants from Scotland (11, 29.7%) and one person from Wales (2.7%).

Areas of teaching covered six of the 10 areas defined by HESA (2023), there were no participants from agriculture, forestry and veterinary science, biological, mathematical, and physical sciences, or education.

5.2.3 Online Questionnaire

The online questionnaire was developed and deployed in the Qualtrics survey software (www.qualtrics.com). The full questionnaire can be found in Appendix C1. The questionnaire used a mixture of 7-point Likert rating items, multiple-choice and open-ended questions. The rating and multiple-choice items were compulsory, but the open-ended questions were optional. This was because the open-ended questions asked participants to elaborate on what their concerns were, participants who did not have any concerns were not expected to reply. Also, I did not want the questionnaire to be too long and onerous to complete.

The questionnaire started with an information page outlining the study's objectives, and the processing and storage procedures for participants' responses. Participants were then asked to explicitly indicate their consent to participate.

The questionnaire consisted of the following five sections:

Section 1. The participant's institution: similar questions to the student survey, but from the point of view of a teacher, for example, how long have they been teaching.

Section 2. Teaching experience before and since the pandemic: participants rated their students' typical level of participation in different types of teaching before and since the pandemic, including activities such as asking questions, contributing to discussions, and interacting with the teacher or other students. Participants also rated their students' level of participation as higher or lower if the session was being recorded for later viewing. A question was asked about students submitting their work in parallel with the student survey. As with the student survey, participants were asked about the main challenges of teaching.

Section 3. Devices and technology used in teaching before and since the pandemic: questions about their experience with videoconferencing and chat technologies including the use of webcams in online teaching, both before and since the pandemic were the same as for the student questionnaire. As with the student questionnaire, an open-ended question addressed the main challenges they faced when using these technologies since the pandemic.

Section 5. Privacy and security concerns in online teaching: an open-ended question asked what "online privacy and security" meant to participants. In the student survey (see Section 3.2.3), this was asked earlier in the questionnaire. This definition was placed later in the questionnaire for the teacher survey, as privacy and security were not mentioned until this section.

The same questions as in the student survey about privacy and security concerns in a range of issues in online teaching were asked but from the teacher's viewpoint. The same questions were asked

about whether their institution had policies on online privacy and security and whether it provided training to students on these policies. Also questions about their level of concern for various specific online teaching situations related to privacy and security, from the teacher viewpoint.

A new question for teachers asked to rate their level of concern about online privacy and security issues in several specific online assessments and examination situations:

- Students colluding with each other in online individual assessments.
- Students cheating in other ways in online assessments.
- Students colluding with each other in online examinations.
- Students cheating in other ways in online examinations.

This was followed by an open-ended question allowing them to elaborate on their concerns about online privacy and security issues in these online assessments and examination situations.

Section 5. Demographics: asked questions on age, gender and highest level of education achieved.

Attention Checks: The questionnaire included two “attention check” questions.

A pilot study was conducted with five teachers of CS at the University of York to assess the clarity of the questions and the time required to complete the questionnaire. Subsequently, some minor adjustments were made based on the feedback gathered, including refining question-wording and clarifying instructions.

5.2.4 Procedure

My supervisor and I asked our contacts within UK HEIs to publicise the study in their institutions. This included posting invitations to participate in the questionnaire on our personal social media accounts, including Facebook, Twitter, and LinkedIn. Also, announcements were placed on outlets such as staff newsletters, and email lists. The study was conducted at the beginning of January 2022.

5.2.5 Data Analysis

The data preparation was undertaken in the same way as for the student survey (see section 3.2.3). Participants were given codes in the form UK-T1, to indicate UK and teacher.

5.3 Results

A majority of participants (64.9%, 24/37) provided a description of what online privacy and security meant to them. The results of a thematic analysis of responses are summarized in Table 5.2.

More than half of those participants (15, 62.5%) defined the concepts in terms of data protection and security, mentioning issues like unauthorized access (8/15, 53.3%) and protection against attacks and cyberattacks (7/15, 46.6%). A further third (9/37, 37.5%) discussed definitions related to confidentiality and privacy (5/9, 55.6%) and concerns about data being leaked or shared without permission (4/9, 44.4%). Most participants related the terms to their personal data. Only one participant mentioned the importance of online activities and accessing the institution's resources in the context of data protection and security.

Table 5.2 Participants' understanding of online privacy and security (N= 24)

THEME /Sub-theme	Examples
DATA PROTECTION AND SECURITY (Mentioned by 15 participants, 62.5%)	
Unauthorized access 8 (53.3%)	Securing information to limit access to authorized individuals (UK-T1). Protection against data collection and sharing by multinational corporations (UK-T2).
Against attacks and cyberattacks 7 (46.6%)	Protection against hackers. (UK-T5). Avoiding cyberattacks and maintaining personal data security (UK-T19).
DATA CONFIDENTIALITY AND PRIVACY (Mentioned by 9 participants, 37.5%)	
Safety and confidentiality 5 (55.6%)	Safety and confidentiality of personal data (UK-T11) Confidentiality privacy and independence, safety (UK-T16)
Data being leaked, and shared without permission 4 (44.4%)	... Ensuring personal data remains private and is not leaked (UK-T24) It means many things, but mostly it is making sure that data does not end up in the wrong hands intentionally, or unintentionally (UK-T14)

5.3.1 UK HEI teachers' experience the move to online teaching due to the pandemic (RQ1)

Participants were asked whether their teaching before the pandemic was totally online, totally face-to-face, or blended (see Table 5.3). 33 participants (89.2%) reported that it had been totally face-to-face, with only one participant (2.7%) reporting totally online teaching, and three participants (8.1%) reporting blended teaching. In response to the pandemic, teaching for the majority of participants (29, 78.4 %) moved totally online with only 8 (21.6%) reporting moved partly online. Thus, for a majority of participants (26, 70.2 %) the pandemic resulted in a radical change in teaching modes, from totally face-to-face to totally online.

Table 5.3 Modes of teaching change in response to the pandemic (N=37)

Modes of teaching before the pandemic	Move totally online	Move partly online	Total
Face to face	26 (78.8%)	7 (21.2%)	33 (100.0%)
Blended	2 (66.7%)	1 (33.3%)	3 (100.0%)
Online	1 (100.0%)	0 (0.0%)	1 (100.0%)
Total	29 (78.4%)	8 (21.6%)	37 (100.0%)

Participants rated their students' level of participation in the different types of teaching before and since the pandemic (Table 5.4). There have been significant decreases in student participation during small group discussions/seminars and lab sessions since the pandemic. However, participation in lectures, one-to-one sessions, and fieldwork showed no significant changes.

Table 5.4 Participants ratings of the level of participation of their students in different types of teaching (from "Never" scored as 1 to "Very frequently scored as 7) (N=37)

Types of teaching	Before the pandemic Median (SIQR)	Since the pandemic Median (SIQR)	Z	p
Lectures (live or recorded)	4.00 (1.50)	3.00 (1.50)	-1.19	n.s.
Small group discussions/seminars	5.50 (1.00)	4.00 (1.00)	-3.42	<.001
Lab sessions (e.g., chemistry or computer labs)	5.00 (2.00)	3.00 (2.00)	-2.20	<.001

One-to-one sessions with students	6.00 (1.00)	6.00 (0.50)	0.12	n.s.
Fieldwork (i.e., sessions away from the institution)	4.00 (2.00)	3.50 (1.00)	1.00	n.s.

Participants rated their students' level of participation in live online sessions (e.g. asking questions, contributing to discussions, interacting with the teacher or other students) has been lower since the pandemic if the students know the session is being recorded ("Not at all" scored as 1 to "Very much" scored as 7). The median rating was 5.00 (SIQR 2.00), not significantly different from the midpoint of the scale (One sample Wilcoxon Signed Rank Test, $z = 2.59$, n.s.). The result indicates that teachers think their level of student participation is somewhat lower if they know the session is being recorded for later viewing.

Participants were asked whether their students typically submitted their work online in three different assessment types before and since the pandemic (Table 5.5). There was no significant in online submission used for feedback and formal assessments before and since the pandemic (McNemar test $\chi^2 = 2.52$ and 2.52 respectively, n.s.). However, there was a significant increase in online submission for exams before and since the pandemic (McNemar test $\chi^2 = 9.60$, $p < .001$).

Table 5.5 Frequency of students submitting work online (N=37)

Assessment types	Before Pandemic	Since Pandemic
Feedback Only	29 (78.3%)	35 (94.6%)
Formal Assessment	31 (83.8%)	36 (97.3%)
Online Exams	11 (29.7%)	26 (70.0%)

In a follow-up open-ended question, participants were asked whether they knew the procedures by which their HEI ensured the privacy and security of their student work submitted online since the pandemic. More than half of participants (20/37, 54.0%) described different procedures. A thematic analysis of these procedures is summarised in Table 5.6.

Most of these participants (13/20, 65.0%) continued to use the same procedures for ensuring the privacy and security of student work as they did before the pandemic. Three of the participants mentioned (3/20, 15%) the use of Turnitin for ensuring security and detecting plagiarism in submissions. Two participants (2/20, 10.0%) mentioned anonymization of student work as a security measure, especially when work was submitted via the VLE. Two participants (2/20, 10.0%) mentioned

procedures related to proctoring for online exams: "Proctoring for online exams where this was a regulatory requirement" (UK-T17).

Table 5.6 Procedures used to ensure the privacy and security of students' work submitted online (N=20)

THEME/Example
CONTINUED USE OF EXISTING PROCEDURES WITH NO PARTICULAR PROCEDURES PROVIDED (Mentioned by 13 participants, 65.0%)
The same as before the pandemic (UK-T5)
Same as procedures pre-pandemic (UK-T10)
USE OF TURNITIN FOR SECURITY AND PLAGIARISM DETECTION (Mentioned by 3 participants, 15.0%)
Work is submitted via Turnitin (UK-T3)
Turnitin (UK-T15)
ANONYMIZATION OF STUDENT WORK (Mentioned by two participants, 10.0%)
Yes, submitted via Blackboard for anonymity (UK-T11)
Anonymization in the Course Management System (UK-T2)

Participants were asked to describe the main challenges they faced in online teaching since the pandemic. A majority of participants (32/37, 86.5%) did mention challenges. A thematic analysis of the challenges identified by participants is presented in Table 5.7.

The most commonly mentioned challenge (15/32, 46.8% participants) was the lack of student engagement and interaction, followed by (5/32, 15.6% participants) students having their webcams off during online classes. Two other challenges (each 4/32, 12.5% participants) related to technology used and time constraints and a final two (2/32, 6.2%) participants related to student support and communication, and increased workload and stress.

Table 5.7 Participants' main challenges faced since the pandemic in online teaching (N= 32)

THEME/Example
LACK OF STUDENT ENGAGEMENT AND INTERACTION (Mentioned by 15 participants, 46.8%)
Lack of engagement and participation from students, particularly in online classes (UK-T8)
The lack of interaction with students. Live online lectures had minimal interaction - the only activities that would garner nearly 100% engagement (UK-T30)
STUDENTS HAVING WEBCAM OFF (Mentioned by 5 participants, 15.6%)

Students' cameras off, and difficulty reading the room (UK-1)
Students were also not inclined to put their cameras on and many of them did not have cameras and not seeing the students was challenging as I am used to reading their reactions to check understanding (UK-T30)
TECHNOLOGY DIFFICULTIES (Mentioned by four participants, 12.5%)
Challenges in procuring the right equipment for video production (UK-T4)
Difficulties in adapting to new technologies, lengthy recording and subtitling processes, and multitasking (UK-T14)
TIME CONSTRAINTS (Mentioned by four participants, 12.5%)
Time required to rewrite work for online delivery and the exhausting nature of online teaching (UK-T18)
Need to make do with less live contact time and the tendency to over-provide material (UK-T26)
STUDENT SUPPORT AND COMMUNICATION (Mentioned by two participants, 6.2%)
Increased student support needs and managed discussions with large groups of students (UK-T11)
Concerns about identifying struggling students and the difficulty of recognizing inattention/confusion without visual cues (UK-T15)
INCREASED WORKLOAD AND STRESS (Mentioned by two participants, 6.2%)
Significantly increased workload and physical strain on instructors (UK-T22)
Increased workload, reduced satisfaction, and lower standards of teaching (UK-T32)

5.3.2 UK HEI teachers' experience the technologies used in online teaching, before and since the COVID-19 pandemic (RQ2)

Participants were asked whether they used videoconferencing technologies before the pandemic. Only two participants (5.4%) reported that they did. In response to the pandemic, all of the participants started using videoconferencing technologies. Thus, the pandemic resulted in a radical change in the use of videoconferencing technologies.

Participants were asked about the challenges of using videoconferencing technologies in teaching since the pandemic. A majority (29/37, 78.3%) reported challenges. A thematic analysis of these challenges is summarized in Table 5.8. The most frequently mentioned challenge (12/29, 41.4% participants) related to students having their webcams off, followed by (10/29, 34.5% participants) maintaining student engagement and interaction, and technical issues (7/29, 24.1% participants).

Table 5.8 Participants' main challenges faced since the pandemic use of videoconferencing technologies in online teaching (N=29)

THEME/Example
STUDENTS HAVING WEBCAM OFF (Mentioned by 12 participants, 41.4%)
Can not see the students, fewer speak if fully online (UK-T26)
No webcams are turned on (UK-T30)
Students not interacting (including leaving their webcams off) (UK-T4)
LACK OF STUDENT ENGAGEMENT AND INTERACTION (Mentioned by 10 participants, 23.5%)
Student engagement and interaction (UK-T11)
User engagement, keeping attention, being able to engage with audiences, and tailoring teaching delivery/materials to fit them (UK-T13)
TECHNICAL CHALLENGES (Mentioned by 7 participants, 24.1%)
Mostly technical problems to do with internet connectivity (UK-T6)
Constantly updating software (Teams) and Helping students who are struggling to connect (UK-T9)

Participants rated how often they had their webcams on during different types of OTSs (Table 5.9). For lab sessions, participants gave ratings significantly below the midpoint, indicating a less-than-average frequency of webcam use. In all other types of OTS, participants reported a median rating significantly above the midpoint, indicating above-average frequency of webcam use.

Table 5.9 Participants ratings of their typical frequency of having their webcams on in different types of OTSs (from "Never" scored as 1 to "Always" scored as 7) (N=37)

Types of OTSs	Median (SIQR)	Z	p
Online lectures	7.00 (0.50)	4.56	<.001
Small group sessions/seminars	7.00 (0.50)	4.56	< .001
Lab sessions	2.00 (3.00)	-0.47	n.s.
One-to-one session with the students	7.00 (0.50)	5.21	< .001

In a follow-up open-ended question, more than half the participants (19/37, 51.0%) described factors influencing their decision to have their webcams on or off during different types of OTS. A thematic analysis of these preferences is summarized in Table 5.10.

More than half of those participants (11/19, 57.8%) gave reasons for choosing to have their webcam on, whereas 42.1% (8/19) gave reasons for keeping their webcam off. Among those who opted to have it on, the majority (9/11, 81.8%) mentioned it was important because they led the sessions. Two participants (2/11, 18.2%) cited politeness and etiquette. Among those who kept their webcam off, the majority (6/8, 75.0%) mentioned the fear of it being a distraction. Two participants (2/8, 25.0%) cited bandwidth constraints: "Usually someone says, turn it off, the bandwidth isn't good enough for all of us to show it" (UK-T8).

Table 5.10 Participants' factors influence their decision to turn on their webcam during different OTSs (N=19)

THEME/Sub-theme	Examples
REASONS FOR HAVING WEBCAM ON (Mentioned by 11 participants, 55.5%)	
leading of sessions 9 (81.8%)	I always put my camera on during sessions I am leading (i.e.: classes) (UK-T20) I am leading, always switch on (UK-T2)
Politeness and etiquette 2 (18.8%)	I always do because it feels rude to make people talk to a black screen (UK-T7) There is an established etiquette I feel (UK-T15)
REASONS FOR HAVING WEBCAM OFF (Mentioned by 8 participants, 42.1%)	
Distractions 6 (75.0%)	.. sometimes turn it off if bored, distracted, or others are talking and don't want to be a distraction (UK-T4)
Bandwidth constraints 2 (25.0%)	Usually, someone says, "Turn it off the bandwidth isn't good enough for all of us to show it" (UK-T8)

Participants rated how often their students typically had their webcams on during different types of OTSs (Table 5.11). For online lectures and lab sessions, participants gave ratings significantly below the midpoint, indicating that students had less-than-average frequencies of having their webcams on during these sessions. In all other cases, participants gave ratings not significantly different from the midpoint, indicating that students had a moderate frequency of their webcams on during small group sessions/seminars and one-to-one sessions with the teacher.

Table 5.11 Participants' ratings of their students' typical frequency of having their webcams on during different types of OTSs (from "Never" scored as 1 to "Always" scored as 7) (N=37)

Types of OTSs	Median (SIQR)	Z	p
Online lectures	2.00 (1.50)	-4.51	<.001
Small group sessions/seminars	3.00 (1.50)	-1.65	n.s.
Lab sessions (e.g., chemistry, biology, or computer labs)	2.50 (1.00)	-2.70	<.001
One-to-one sessions with the teacher	5.00 (1.00)	2.98	n.s.

In a follow-up open-ended question, more than half of the participants' (24/37, 64.8%) explained their attitudes about whether students should have their webcams on or off. A thematic analysis of these preferences is summarized in Table 5.12. Nearly half of those participants (11/24, 45.8%) preferred their students to have their webcams on for engagement and participation. Similarly, nearly half (11/24, 45.8% participants) said that turning on the webcam should be the student's personal choice, without providing more details. Less frequently mentioned explanations (2/24, 8.3% participants) were context-dependent preferences, participants noting that their preference depending on the nature of the session.

Table 5.12 Participants' attitudes to whether students should have their webcams on or not (N=24)

THEME/Examples
IMPORTANT OF TURNING THE WEBCAM ON FOR ENGAGEMENT AND PARTICIPATION (Mentioned by 11 participants, 45.8%)
I think it's important for them to see the others in the group. I am concerned they may not be engaging (or have even left the room) if their camera is off (UK-T1)

It is really beneficial to group participation if students have their webcams on (UK-T8)
WEBCAM USE SHOULD BE THE STUDENT'S PERSONAL CHOICE (Mentioned by 11 participants, 45.8%)
I'd rather they did - but it's their choice (UK-T7)
I can't really force them; it is nice if they do but it's their choice as adults (UK-T23)
CONTEXT-DEPENDENT PREFERENCES (Mentioned by two of participants, 8.3%)
For lectures, I would prefer students have their cameras on at the beginning of a session when it's usually just greeting people, etc. and if they are contributing to a discussion, and at the end (UK-T12)
During small group sessions, I would prefer for students to have their cameras on throughout (UK-T13)

Participants were asked about their use of online chat technologies and synchronous and asynchronous communication since the pandemic. Less than half of the participants (15/37, 40.5%) reported using synchronous chat, while more than half (21/37, 56.7%) did not. For asynchronous, more than half of the participants (21/37, 56.7%) reported using them, while 15 (40.5%) did not.

In the follow-up open-ended question, only two participants (2/37, 5.4%) mentioned challenges related to either synchronous and asynchronous communication. Both focused on the expectation of synchronous communication. One participant stated, "The main problem is having attention divided—running a class and keeping an eye on the chat is difficult" (UK-T22), and another stated, "The biggest challenge is being able to teach, read, and respond to chat at the same time; it is simply not practical for a single lecturer" (UK-T24).

5.3.3 UK HEI teacher's concerns about privacy and security in online teaching (RQ3)

Participants rated their level of concern about privacy and security issues when using different devices in online teaching (Table 5.13). All ratings were significantly below the midpoint of the scale, indicating that teachers were not particularly concerned about these issues.

Table 5.13 Participants' level of concern about online privacy and security issues in using the different devices in online teaching (from "Not at all concerned" scored as 1 to "Very concerned" scored as 7) (N=37)

Devices	Median (SIQR)	Z	p
Institutional			
Desktop	1.00 (0.50)	-3.78	< .001
laptop	1.00 (1.50)	-3.92	< .001
Tablet	1.50 (1.00)	-2.23	< .001
Smartphone	1.50 (1.00)	-2.55	< .001
Personal			
Desktop	1.00 (0.50)	-3.76	< .001
laptop	1.00 (1.00)	-3.28	< .001
Tablet	2.00 (2.50)	-2.46	< .001
Smartphone	2.00 (2.50)	-3.85	< .001

In the follow-up open-ended question, more than one-third of the participants (13/37, 35.1%) expressed security and privacy concerns regardless of whether they used personal or institutional devices. A thematic analysis of these preferences is summarized in Table 5.14. The two most common concerns (each 4/37, 30.7% participants) related to data protection and hacking or system intrusion, without mentioning specific types of devices. Another three participants (3/13, 23.0%) expressed concerns about using personal devices for work and two (2/13, 15.3%) expressed concerns about using smartphones.

Table 5.14 Participants' privacy and security concerns about using institutional and personal devices in teaching situations (N=13)

THEME/Example
DATA PROTECTION CONCERNS WITHOUT MENTIONING SPECIFIC TYPES OF DEVICES (Mentioned by four participants, 30.7%)
I'm never sure whether I have accurately protected the data that I have collected though I do my best (UK-T1)

Beyond the risk of password-protected systems being hacked, the bigger concern is student data being fed into purchased systems (MS, Turnitin) that have objectives at odds with HE(UK-T6)

HACKING AND SYSTEM INTRUSION WITHOUT MENTIONING SPECIFIC TYPES OF DEVICES (Mentioned by four participants, 30.7%)

The usual stuff about hacking and system intrusion concerns me. No system is completely safe (UK-T3)

There's always a worry about being hacked, which I don't think has happened so far (UK-T11)

CONCERNS ABOUT USING PERSONAL DEVICES FOR WORK (Mentioned by three participants, 23.0%)

When I use personal devices for work, I am concerned that my personal data (things I might surf, store data) might be compromised if I connect to the University's network (UK-T9)

My phone is a major part of my life, and I resent it being used for my work (UK-T7)

SMARTPHONE CONCERN (Mentioned by two participants, 15.3%)

I have access to both my work emails and documents on my mobile phone, which isn't encrypted... there isn't anything barring another person from looking at that stuff if my phone is unlocked, lost, or hacked (UK-T4)

If someone were to gain access to my smartphone, it is possible that they could view potentially confidential emails (UK-T5)

Participants were asked if they knew whether their institution had policies about privacy and security issues about the use of technologies for online teaching. More than half of the participants (22, 59.5%) knew of such policies, less than one-third (11, 29.7%) said they thought the institution did not have any policies.

When asked whether their institution provides training in such issues, nearly half of the participants (18/37, 48.6%) reported that training was provided, while less than half were unsure or did not know (15/37, 40.5%). Only four participants (10.8%) said their institution did not provide any training. In addition, when asked whether they received any training in these issues, nearly half of the participants (18/37, 48.6%) reported that they had received training, while 7 participants (18.9%) said they had not, and 8 participants (21.6%) were unsure or could not remember.

In the follow-up open-ended question, among the 18 participants who indicated that training was available, half (50.0%) described the training in general terms without elaborating. Five participants (27.8%) noted that training was optional and available to those who chose to take it, while four participants (22.2%) stated that training was mandatory.

Participants rated their levels of concern about privacy and security issues about the use of videoconferencing and online chat technologies for OTSs (Table 5.15). In two cases, participants rated their concern as very low (median of "Not at all concerned" in all two cases, significantly below the midpoint of the rating scale).

Table 5.15 Ratings of concern about online privacy and security about using videoconferencing and chat technologies in online teaching (from “Not at all concerned” scored as 1 to “Very concerned” scored as 7) (N=37)

Activities	Median (SIQR)	Z	p
Using videoconferencing technology for teaching	2.00 (1.00)	-3.35	<.001
Using online chat technologies for teaching	2.00 (0.90)	-2.89	<.001

In a follow-up open-ended question about any concerns, 18 participants (48.6%) raised concerns about using both videoconferencing and online chat technologies for online teaching (an interesting contrast to the very low ratings). A thematic analysis revealed a range of concerns (see Table 5.16). A majority of the participants (15/18, 83.3%) had concerns about videoconferencing technologies. Among those participants, 40.0% of these participants (6/15) raised concerns about being recorded without permission, one-third (5/15, 33.3%) about the unauthorized reuse of materials and two each (2/15, 13.3%) about confidentiality, intrusion, and institutional surveillance during online sessions or about privacy in their home environment. For example, “There are concerns about sharing my image and images of my home, especially of my family and domestic space ... depending on where I am working, I do not necessarily wish to do this with students” (UK-T7).

Only three participants (3/18, 16.7%) raised concerns about using chat technologies. All three had concerns about over-sharing and unprofessional use of chat systems, especially by students who may not be familiar with the boundaries of professional communication.

Table 5.16 Concerns about videoconferencing and online chat technologies (N = 18)

THEME/Sub-theme	Examples
CONCERNS ABOUT VIDEOCONFERENCE SYSTEMS (Mentioned by 15 participants, 83.3%)	
Being recorded (without permission) 6 (40.0%)	I was made aware last year that students were recording online Q&A classes and office hours without consent from teaching staff or other students (UK-T4) .. I could be recorded without my consent or knowledge. I am uncomfortable being recorded (UK-T5)
Unauthorized use of teaching materials 5 (33.3%)	...students many of whom think it is fine to download and re-upload these videos elsewhere. (UK-T10)

	... clipping of material that ends up on social media (UK-T12)
Confidentiality, intrusion, and institutional surveillance	intrusion and also possible institutional surveillance (UK-T2)
2 (13.3%)	Sometimes confidential sessions need to take place online. If they are not secure, this could constitute a serious data breach (UK-T4)
Privacy concerns about the home environment	I don't like relative strangers seeing into my home (UK-T5)
2 (13.3%)	There are concerns about sharing my image and images of my home especially of my family and domestic space ... depending on where I am working, I do not necessarily wish to do with students (UK-T7)
CONCERNS USING CHAT TECHNOLOGY (Mentioned by 3 participants, 16.7%)	
Over-sharing and unprofessional use of chat systems	... students, who might be too familiar with chat systems in their personal lives, might over-share information (with staff or other students) (UK-T3)
3 (16.7%)	

Participants rated their level of concern about online privacy and security issues in a number of specific online teaching situations (Table 5.17). Ratings of two situations (being recorded in online lectures or seminars without one's knowledge) were significantly below the midpoint of the scale, indicating low levels of concern. Ratings of two other situations (both relating to unauthorized people attending or interrupting sessions) were also significantly below the midpoint of the scale, indicating low levels of concern. Ratings of all other situations were not significantly different from the midpoint indicating moderate levels of concern.

Table 5.17 Participants' level of concern about online security and privacy in particular teaching situations (from "Not at all concerned" scored as 1 to "Very concerned" scored as 7) (N=37)

Situations	Median (SIQR)	Z	p
My online lectures are being recorded without my knowledge	2.00 (2.00)	-1.85	< .001
My online seminars are being recorded without my knowledge	2.00 (2.50)	-1.65	< .001
My online teaching materials (e.g., slide packs, notes, reading lists) are being re-used by others without my authorization	3.00 (2.00)	-0.59	n.s.
Students not turning on their webcams during sessions	5.00 (2.00)	0.86	n.s.
Unauthorised people attending sessions	2.00 (1.50)	-3.74	< .001
Unauthorised people interrupting sessions	2.00 (1.50)	-2.86	< .001
Students making recordings without your permission during OTSs (e.g., using their phone)	4.00 (1.50)	-0.88	n.s.
Accidentally sharing the wrong window that contains private information	3.00 (2.00)	-0.38	n.s.
Online chat members sharing my conversations with others without my permission	2.00 (2.00)	-0.85	n.s.
Verifying the identity of the person I am communicating with in an online chat	2.00 (1.00)	-3.33	n.s.

Participants rated their level of concern about online privacy and security issues in several online assessments and examination situations (Table 5.18). Ratings of all situations were not significantly different from the midpoint of the scale, which indicated moderate levels of concern.

Table 5.18 Participants' level of concern about privacy and security issues in several specific online assessments and examination situations (from "Not at all concerned" scored as 1 to "Very concerned" scored as 7) (N=37)

Situations	Median (SIQR)	Z	p
Students colluding with each other in online individual assessments	4.00 (1.00)	0.94	n.s.
Students cheating in other ways in online assessments	4.00 (1.00)	0.49	n.s.
Students colluding with each other in an online examination	4.00 (1.00)	1.57	n.s.
Students cheat in other ways in online examination	4.00 (1.00)	0.91	n.s.

5.4 Discussion and Conclusions

This study investigated the experiences and concerns related to privacy and security in the online teaching of UK HEI teachers before and since the pandemic. It also examined teachers' experiences with technologies used in online teaching such as chat and videoconferencing.

Participants were asked what "online privacy and security" meant to them. The results showed that they had a reasonable understanding of online privacy and security, especially about protecting data, preventing unauthorized access, and keeping personal data safe. However, even though the study was about online teaching, they did not often talk about these issues about online teaching activities or their institutions. This could mean that teachers are not fully connecting privacy and security with online teaching. Their focus seemed more on protecting personal data and less on things such as institutional policies, teaching methods, or the technologies used in online classes. These findings show that more research is needed to understand how HEI teachers see privacy and security in online teaching. As mentioned in Study 1 (section 3.4), a future survey question could be more specific and mention online teaching, but further research could investigate this issue in more depth. It is surprising that, even though the use of some online teaching was relatively common before the pandemic, I could not find any research on how teachers understand privacy and security of online teaching. This is an important area for future studies, especially as the use of online teaching continues to grow.

RQ1 investigated participants' experiences of online teaching both before and since the pandemic. The shift from face-to-face to fully online teaching affected most UK HEI teachers, with noticeable drops in student participation in small group discussions, seminars, and lab sessions. This

decline was expected because it has been harder to organize interactive teaching formats online since the pandemic. Lecture participation in one-to-one sessions stayed stable. An interesting finding is that participants perceived that students participated less in live online sessions that were recorded for later viewing compared to unrecorded sessions. This matches my findings in Study 1 in which UK students rated their own participation lower in live recorded sessions. However, it is not clear why recording live sessions affect participation in this way, making this an important area for future studies.

The study found that the frequency of online submissions increased significantly for online exams indicating that HEIs shift towards online assessment methods because of the pandemic. While more than half of the participants are aware of the privacy and security procedures in place most of them still rely on the same methods as they did before the pandemic. Some have added tools like Turnitin or measures such as anonymization and proctoring for online exams which may reflect extra care to protect student work in the OTEs.

RQ2 examined participants' experiences with videoconferencing technologies, including webcam use, for online teaching before and since the pandemic. Participants reported an increase in videoconferencing use since the pandemic. Many participants reported facing challenges in online teaching and videoconferencing technologies. A common challenge was students keeping their webcams off. Some participants said this made it difficult to see students and some felt that fewer students spoke or interacted when webcams were off. This indicates that students having their webcams off may have reduced interaction during OTSs. Another common challenge was a lack of student engagement and interaction. These findings agree with Yarmand et al. (2021) who found that most US HE students did not have webcams making it difficult for US teachers to assess engagement and interpret visual cues. These findings show the need for teachers to develop strategies to improve student engagement and interaction in online teaching.

The use of webcams was different depending on the types of OTSs. Participants did not have their webcams often in lab sessions but they had them on more often in online lectures, small group sessions/seminars and one-to-one sessions with students. This indicates that teachers are more likely to use webcams in sessions that involve communication and interaction, such as discussions or direct teaching, than in practical sessions like labs. In the follow-up open-ended question, participants primarily had their webcams on to lead sessions possibly due to their understanding of the importance of visual cues. When asked about their students' webcam use, they reported that students had their webcams on less during lectures and labs but more in group discussions and one-on-one sessions. These findings suggest that both teachers and students adjusted their webcam use based on the types of OTSs. Further research is needed to explore evolving perceptions of webcam use as online teaching advances, especially about privacy and security in OTSs.

RQ3 investigated participants' experiences and concerns about privacy and security in online teaching since the pandemic. Participants generally reported low levels of concern about using devices, but about one-third mentioned issues such as data protection and hacking in their follow-up open-ended questions. These concerns applied to both personal and institutional devices. The results found that not all teachers have the same level of awareness or training, which suggests more efforts are needed to ensure all HEI staff have access to training and know the institution's policies. As mentioned in the literature review (see Section 2.6), there has been a lack of clarity of policies in this area.

Although participants' overall concerns about privacy and security in online teaching were low, they identified four specific areas of moderate concern: the reuse of teaching materials, students not having their webcams on, unauthorized recording of OTSs, and sharing of private information. These concerns reflect wider issues, for example, intellectual property, student engagement, and data protection. Concerns about unauthorized recording of OTSs and sharing private information show that UK HEI teachers are aware of the risks of content misuse and online videoconferencing. Similar findings were reported by Alhubaishy & Aljuhani (2021) in KSA, where teachers had privacy concerns though the focus on online teaching was less explicit. Although I did not specifically ask the participants whether they had personally experienced any of the privacy and security issues asked about in the questionnaire, analysis of the open-ended questions suggests that very few participants had actual experience with the issues they were concerned about, but had heard or thought about these issues. There were numerous uses of hypothetical phrases such as "I do not like my identity being broadcast online...." (UK-T5) and "I assume all of these happen..." (UK-T1). There were only a very few instances in which a participant recounted an experience in some detail which they had clearly experienced personally. One participant reported this happening to him/her "I was made aware last year that students were recording online Q&A classes and office hours without consent from teaching staff or other students" (UK-T4). One important point to note is that the UK teacher sample in this study was somewhat older than typical. As a result, the findings may reflect the views of more experienced teachers further research with a more balanced age distribution would help generalize the results to the broader UK HEI population.

The study has two limitations that need to be addressed. The first limitation was the relatively small number of 37 participants. This was partly due to challenges in recruiting teachers, likely because of their high workload, which required more commitment than simply completing a survey. The length of the questionnaire may have also contributed to this issue. Although 60 teachers initially responded, 21 were excluded as they had not completed at least 75% of the questionnaire. This shows the importance of designing online questionnaires to be focused and concise to reduce the burden on

participants. Another limitation was the results relied on the honesty and accuracy of the participants' self-reports as discussed in Study 1.

In conclusion, this study explored UK HEI teachers' experiences and concerns about privacy and security in online teaching before and since the pandemic. The move to online teaching since COVID-19 brought substantial changes for UK teachers. The main challenges faced were keeping students engaged and interacting. Since the pandemic, UK teachers have used videoconferencing much more, but webcam use is different depending on the type of session. Most UK teachers knew about their institutions' policies in this area and had received training. They were concerned about issues such as teaching materials being reused, unauthorized recordings, sharing private information by mistake, students not using webcams, and problems with online assessments. Despite these concerns, their overall levels of concern about online privacy and security were low.

Chapter 6: Study 4: Privacy and Security in Online Teaching: Experiences and Concerns of Teachers in KSA Higher Educational Institutions Before and Since the Pandemic

6.1 Introduction

As discussed in the literature review (Section 2.3.2), some previous research has examined KSA HEI teachers' experiences with technology in online teaching since the pandemic (Alqahtani & Rajkhan, 2020; Alammery, Alshaikh, & Alhogail, 2021; Meccawy et al., 2021). However, there remains a gap in research addressing KSA teachers' privacy and security concerns in online teaching during this period. Building on the investigation of privacy and security concerns among UK teachers in Study 3 (Chapter 5), this chapter focuses on KSA HEI teachers. It investigated how teachers in KSA HEIs experienced the transition to online teaching and their concerns about online privacy and security in online teaching since the COVID-19 pandemic.

The study investigated the following research questions:

RQ1: How did KSA HEI teachers experience the move to online teaching due to the pandemic?

RQ2: How did KSA HEI teachers experience the technologies used in online teaching, before and since the pandemic?

RQ3: What are KSA HEI teachers' concerns about privacy and security in online teaching?

6.2 Method

6.2.1 Design

The study used an online questionnaire and sampled KSA HEI teachers. For this study, I chose to focus particularly on KSA teachers for similar reasons as the choice of KSA students (see Section 4.2.1). The unique cultural and educational context in KSA, along with the lack of existing research on privacy and security concerns in online teaching, made Saudi teachers an important group to examine.

The questionnaire was the same as the one used for the UK teachers' survey (Section 5.2.2). However, to ensure it was culturally and linguistically appropriate for the Saudi context, one small

modification was needed, adjusting the gender options (Section 4.2.1). The study received ethical approval (Almekhled20211026) from the Physical Sciences Ethics Committee of the University of York.

6.2.2 Participants

46 teachers responded to my invitation, but data from seven were excluded because they had not met the criterion of completing at least 75% of the questionnaire, and three participants failed the attention check questions (section 6.2.1), leaving a sample of 36 participants. More than half the participants (23, 63.8%) were teaching at public HEIs and the remainder (13, 36.1%) at private institutions. Demographic information for the sample is shown in Table 6.1.

Table 6.1 Demographic information for the participants in Study 4 (N = 36)

Age	
Range	28 – 57
Mean	36.00
Standard deviation	5.31
Gender	
Men	14 (38.9%)
Women	22 (61.3%)
Highest level of education	
Bachelor	2 (5.6%)
Masters	18 (50.0%)
PhD	16 (44.4%)
Years of teaching experience	
Less than a year	2 (5.6%)
1 to 5 years	14 (38.9%)
6 to 10 years	16 (44.4%)
11 to 15 years	2 (5.6%)
More than 15 years	2 (5.6%)
The subject area of teaching	
Arts/Humanities	6 (16.7%)
Administrative and Financial sciences	7 (19.4%)
CS and Engineering	19 (52.8%)
Medical Sciences and Health Science	2 (5.6%)
Social sciences (e.g., psychology, sociology)	2 (5.6%)

The sample was slightly skewed toward women (22, 61.3%). Most participants had a Masters or PhD degree (94.4%). Nearly half of the participants have 6 to 10 years of teaching experience in HEIs. Just over half the participants (19, 52.8%) taught in CS and engineering departments. Others taught in a range of other disciplines. Unfortunately, precise statistics on the distribution of KSA HEI teachers by discipline, age, or subject area were unavailable, similar to the situation for KSA students (Section 4.2.2), making it difficult to assess the representativeness of my sample.

6.2.3 Online Questionnaire

The questionnaire was very similar to the one used for the UK HEI teachers' study (Section 5.2.3). However, as previously mentioned, only one modification was needed adjusting the gender options (Section 4.2.1). I translated the questionnaire into Arabic. The accuracy of the Arabic translation was checked following the same procedure used for the KSA student questionnaire (see Section 4.2.3). KSA teacher participants had the option of completing either the English or Arabic version of the questionnaire by selecting their preferred language at the beginning of the Qualtrics session.

A pilot study was conducted with five CS teachers at the SEU and King Khalid University in KSA to assess the clarity of the questions and the time required to complete the questionnaire. Subsequently, some minor adjustments were made based on the feedback gathered, including refining the wording of the questions and clarifying the instructions.

The full questionnaire can be found in Appendix C2.

6.2.4 Procedure

I recruited teachers directly and asked the help of my colleagues from different departments at various universities in KSA to distribute the survey and find participants. To make sure I had a range of teachers participating I used different recruitment methods, such as university email lists, online forums, and social media platforms to reach out to a diverse group of teachers for the study.

Participants were given a full information sheet about the study's aims and how their responses would be processed and stored. The study was conducted in January 2022.

6.2.5 Data Analysis

The data analysis was undertaken in the same way as for the UK students' study (section 3.2.5). The only difference is that I first translated responses to open-ended questions into English.

6.3 Results

Before addressing the three research questions, the Results section presents the results on participants' own understanding of online privacy and security. This was not a compulsory question, and only 38.8% of participants (14/36) provided an answer. The results of a thematic analysis of responses about online privacy and security are summarized in Table 6.2. Among those who provided answers, half of the participants (50.0%, 7/14) mentioned protecting personal information; four participants (28.6%) mentioned preventing unauthorized access to data; and three participants (21.4%) mentioned ensuring the confidentiality and integrity of data. Interestingly, all these themes relate to data, both personal and teaching-related and not the privacy or security of the location or appearance of the person.

Table 6.2 Participants' understanding of online privacy and security (N=14)

THEME/Example
PROTECTING PERSONAL INFORMATION (Mentioned by 7 participants, 50.0%)
Protect my basic information such as my name and mobile number, ensuring my right to preserve my image and voice (KSA-T1)
PREVENTING UNAUTHORIZED ACCESS TO DATA (Mentioned by four participants, 28.6%)
My personal data is secured (KSA-T13)
The inability of others to see the contents of my device (KSA-T4)
ENSURING THE CONFIDENTIALITY AND INTEGRITY OF DATA (Mentioned by 3 participants, 21.4%)
Maintaining information about teaching materials, exams, and more (KSA-T5)
Ensure the confidentiality and authenticity of data transmission and not use it without permission (KSA-T9)
The most important standard to ensure data integrity (KSA-T14)

6.3.1 KSA HEI teachers' experience the move to online teaching due to the pandemic (RQ1)

Participants were asked whether their teaching before the pandemic was totally online, totally face-to-face, or blended. 19 participants (52.8%) reported that it had been totally face-to-face, with no one reporting totally online teaching, and 17 (47.2%) reporting blended teaching. In response to the pandemic, teaching for the majority of participants (35, 97.0%) moved totally online with only one

participant (1, 2.8%) reporting moved partly online (Table 6.3). More than half the participants (19, 52.8%) transitioned from face-to-face teaching to fully online teaching, slightly less than half (17, 47.2%) moved from a blended mode to fully online teaching.

Table 6.3 Modes of teaching change in response to the pandemic (N = 36)

Modes of teaching before the pandemic	Move totally online	Move partly online	Total
Face to face	18 (94.7%)	1 (5.3%)	19 (100%)
Blended	17 (100.0%)	0 (0.0%)	17 (100%)
Total	35 (97.2%)	1 (2.8%)	36 (100%)

Participants rated their students' typical level of contribution in the different types of teaching before and since the pandemic (Table 6.4). For all five types of teaching, their rating of their students' level of contribution in the different types of teaching had median ratings not significantly different before and since the pandemic.

Table 6.4 Participants' typical level of contribution in the different types of teaching before and since the pandemic (from "Never" scored as 1 to "Very frequently" scored as 7) (N=36)

Types of teaching	Before the pandemic Median (SIQR)	Since the pandemic Median (SIQR)	Z	p
Lectures (live or recorded)	4.50 (1.50)	5.00 (1.66)	-1.29	n.s.
Small group discussions/seminars	4.00 (1.17)	4.50 (1.72)	-1.24	n.s.
lab sessions (e.g., Chemistry or computer labs)	4.00 (1.49)	4.50 (1.70)	-.860	n.s.
One-to-one sessions with teachers	4.00 (1.35)	5.00 (1.69)	.730	n.s.
Fieldwork (i.e., sessions away from the institution)	5.00 (1.11)	4.00 (1.55)	-1.97	n.s.

Participants rated whether their students' level of participation in live online sessions (e.g. asking questions, contributing to discussions, interacting with the teacher or other students) has been lower since the pandemic if the students know the live session is being recorded (from "Not at all" scored as 1 to "Very much" scored as 7). Participants had a median rating of 5.00 (SIQR 2.00), which is not significantly different from the midpoint of the scale (One sample Wilcoxon Signed Rank Test, Z =

2.60, n.s.), indicating that teachers think their level of student participation is somewhat lower if they know the session is being recorded.

Participants were asked whether their students typically submitted their work online in three different assessment types before and since the pandemic see Table 6.5. There was no significant difference in online submission used for feedback, formal assessments and online exams before and since the pandemic (McNemar test $\chi^2 = 3.20, 0.25, \text{ and } 3.20$ respectively, n.s.).

Table 6.5 Frequency of student submitting work online (N=36)

Assessment types	Before Pandemic	Since Pandemic
Feedback Only	24 (66.7%)	31 (86.1%)
Formal Assessment	29 (80.6%)	32 (88.1%)
Online Exams	26 (72.2%)	31 (86.1%)

In a follow-up open-ended question, participants were asked if they were aware of the procedures by which their HEI ensured the privacy and security of their students' work submitted online. Interestingly, none of the participants provided an answer to this question.

Participants were asked to describe the main challenges they faced in online teaching since the pandemic. Half the participants (18/36, 50.0%) answered. A thematic analysis of the challenges identified by participants is presented in Table 6.6. The most commonly mentioned challenge (7/18, 38.8% participants) was a lack of engagement and participation by students, followed by (5/18, 27.7% participants) communication and evaluation challenges and (4/18, 22.2%) Internet connection issues. Finally, two participants (11.1%) mentioned practical teaching difficulties as a challenge.

Table 6.6 Participants' main challenges faced since the pandemic in online teaching (N= 18)

THEME/Examples
STUDENT ENGAGEMENT AND PARTICIPATION (Mentioned by 7 participants, 38.8%)
Student engagement and participation in activities (KSA-T1)
Motivating students to participate and interact with the lectures and encouraging them to seek help when needed (KSA-T11)
COMMUNICATION AND ASSESSMENT DIFFICULTIES (Mentioned by 5 participants, 27.7%)
Lack of direct communication leads to difficulty in the real assessment of students (KSA-T12)
Difficulty in conveying information, answering all questions, and facing communication problems that interrupt the education session (KSA-T17)
INTERNET CONNECTION (Mentioned by four participants, 22.2%)
Weak network connection (KSA-T4)
Internet outage (KSA-T21)
PRACTICAL CHALLENGES IN TEACHING (Mentioned by two participants, 11.1%)
Delivering the correct practical application to students, difficulty in evaluating artworks through pictures(KSA-T1)
Communicating practical information through the webcam takes more time and students do not understand the practical part (KSA-T2)

6.3.2 KSA HEI teachers'experience the technologies used in online teaching, before and since the pandemic (RQ2)

Participants were asked whether they were using videoconferencing technologies before the pandemic. 25 (69.4%) participants reported did and 11 participants (30.5%) reported that they did not. In response to the pandemic, almost all participants (34/36, 94.0%) reported using these technologies.

Participants were asked about the challenges of using videoconferencing technologies in online teaching since the pandemic, and nearly half of the participants (16/36, 44.4%) answered. A thematic analysis of these challenges is summarized in Table 6.7.

The majority of challenges reported by participants (10/16, 62.5%) were related to internet connection problems. Less frequently mentioned challenges (3/16, 18.6% participants) were about difficulty in explaining Information and communication. Two participants (12.5%) found difficulties in using new tools for the first time. Only one participant (6.2%) mentioned the use of webcams: "Insecurity of using the camera, with the need to open it to explain the practical side" (KSA-T4).

Table 6.7 Participants' main challenges in using videoconferencing technologies in online teaching (N= 16)

THEME/Examples
INTERNET CONNECTIONS (Mentioned by 10 participants, 62.5%)
Poor network coverage for some areas (KSA-T3)
Internet connection (KSA-T7)
DIFFICULTY IN EXPLAIN INFORMATION AND COMMUNICATION (Mentioned by 3 participants, 18.6%)
The difficulty of explaining the information clearly and correctly, especially in the practical part of the article (KSA-T1)
Difficulty communicating with students in case of misunderstanding of the material (KSA-T6)
DIFFICULTIES IN USE NEW TOOLS (Mentioned by two participants, 12.5%)
Using the tools for the first time, and the institute did not obtain the appropriate training at first (KSA-T12)
The video is not displayed with audio and video. The inability to delete messages sent from members' chats. It is not possible to share a file with the attendees (send it) (KSA-T13)

Participants rated how often they turned on their webcam during different types of OTSs (Table 6.8). For all types of OTSs, participants gave very low ratings (all significantly lower than the midpoint of the rating scale), indicating that they never or very infrequently turned on their webcam during OTSs.

Table 6.8 Participants ratings of their typical frequency of having their webcams on in different types of OTSs (from "Never" scored as 1 to "Always" scored as 7) (N=36)

Type of OTSs	Median (SIQR)	Z	p
Online lectures	1.00 (0.50)	- 4.33	< .001
Small group sessions/seminars	1.00 (0.50)	- 4.43	< .001
Lab sessions	1.00 (0.50)	- 4.83	< .001
One-to-one sessions with student	1.00 (0.50)	- 4.83	< .001

In a follow-up open-ended question, only four participants (4/36, 11.1%) gave their attitudes toward using a webcam during different types of OTSs:

"I place a sticker over my camera and only use it when a visual explanation is required" (KSA-T2)

"the camera is frequently off, particularly in the women's teaching sessions" (KSA-T4)

"My choice to turn on the webcam is based on two main factors: whether it is the first time I communicate with students and the practicality of the internet connection" (KSA-T6)

"It is my choice to activate the webcam depending on the nature of the meeting. When conducting research with colleagues, the webcam is typically on, whereas it is off when interacting with students." (KSA-T7).

Participants rated how often their students typically turn on their webcam during different types of OTSs (Table 6.9). In all cases, participants gave very low ratings significantly below the midpoint of the scale, indicating that their students never or very infrequently turned on their webcam during OTSs.

Table 6.9 Participants ratings of their students' typical frequency of having their webcams on during different types of OTSs (from "Never" scored as 1 to "Always" scored as 7) (N=36)

Types of OTSs	Median (SIQR)	Z	p
Online lectures	1.00 (0.50)	- 5.29	<.001
Small group sessions/seminars	1.00 (0.50)	- 5.28	<.001
Lab sessions	1.00 (0.50)	- 4.66	< .001
One-to-one sessions with students	1.00 (0.50)	- 4.56	< .001

In a follow-up open-ended question, only a few participants (7/36, 19.4%) gave their attitudes on whether students should have their webcams on or off, but these showed a range of views. Two participants (28.5%) felt it was unnecessary. KSA-T1 stated, "This is not done because there is no need" and KSA-T4 added, "It doesn't matter". Two participants (28.5%) mentioned matters of personal preference: "I don't often ask the students" (KSA-T6). On the other hand, KSA-T5 noted "I feel like I'm explaining to an empty class". Finally, one participant mentioned cultural expectations regarding webcam use: "As girls, it's fine and expected not to open the webcam" (KSA-T6).

Participants were asked about their use of online chat technologies for both synchronous and asynchronous communication, both before and since the pandemic. For synchronous communication, before the pandemic, 22 participants (61.1%) reported using online chat technologies, while 11 participants (30.5%) did not. Only three participants (8.3%) could not recall their previous usage. Since the pandemic, 31 participants (86.1%) reported using online chat technologies for synchronous

communication. This increase was statistically significant indicating a change in participants' use (McNemar test, $\chi^2 = 9.0$, $p < 0.05$).

For asynchronous communication, before the pandemic, 25 participants (69.4%) reported using these technologies, while 8 participants (22.2%) did not. Only three participants (8.3%) could not recall their previous usage. Since the pandemic, 32 participants (88.8%) reported using asynchronous communication technologies. However, this change was not statistically significant (McNemar-Bowker test, $\chi^2 = 5.5$, $p = .062$).

Participants were asked about any challenges of using online chat technologies in online teaching. Five participants (5/36, 13.9%) answered. The most commonly mentioned challenge (4/5, 80.0% participants) was the impact of communication outside work hours. Another challenge, but mentioned by only one participant (20.0%) was articulating their thoughts in a way that is fully understood by others.

6.3.3 KSA HEI teachers' concerns about privacy and security in online teaching (RQ3)

Participants rated their level of concern about privacy and security issues in online teaching using different devices (Table 6.10). Ratings were not significantly different from the midpoint of the scale, meaning teachers have moderate levels of concern about using different devices for teaching.

Table 6.10 Participants' level of concern about online privacy and security issues in using the different devices in online teaching (from "Not at all concerned" scored as 1 to "Very concerned" scored as 7) (N=36)

Devices	Median (SIQR)	Z	p
Institutional			
Desktop	3.50 (3.00)	-1.99	n.s.
laptop	3.50 (3.00)	-1.36	n.s.
Tablet	3.50 (3.00)	-0.67	n.s.
Smartphone	3.50 (3.00)	-0.62	n.s.
Personal			
Desktop	3.50 (2.50)	-2.01	n.s.
laptop	3.50 (3.00)	-2.47	n.s.
Tablet	4.00 (2.50)	-1.68	n.s.
Smartphone	3.00 (2.50)	-2.33	n.s.

In response to the follow-up open-ended question, only three participants (8.3%) expressed privacy and security concerns about specific devices. The concern mentioned by all three participants was hacking. KSA-T2 stated, "The device may be hacked," while KSA-T5 stated "Hacking and losing necessary documents".

Participants were asked if they knew whether their HEI has policies about privacy and security issues about the use of videoconferencing and chat technologies for online teaching. More than half the participants (23/36, 63.8%) knew of such policies whereas less than one-third of participants (10/36, 27.8%) said they thought the institution did not have any policies. Only three of the participants (8.3%) did not know of any such policies.

In the follow-up open-ended question, less than a quarter of the participants (7/36, 19.4%) shared information about their institutions' practices or policies. Some examples are:

"Zoom has been suspended until a security bug is fixed" (KSA-T2)

"Set up webinars without displaying participant names or accounts and disabled both microphone and video" (KSA-T3)

"It is important to sensitize users through periodic bulletins" (KSA-T5)

"Multiple usage policies are posted at our institution" (KSA-T7).

When asked whether their institution provides training about online privacy and security issues, just over half of the participants (19/36, 52.8%) reported that training was provided, while a quarter (9/36, 25.0%) reported that they did not, and the remainder (8/36, 22.2%) did not know. When asked whether they personally received any training in online privacy and security issues, less than a quarter (7/36, 19.4%) reported that they had, and one-third (12/36, 33.3%) reported that they had not.

In the follow-up open-ended question, only three participants (8.3%) provided details about the training they were aware of: "The deanship of technology manages all troubleshooting and faculty training on new technologies, including VLE, personal websites, etc" (KSA-T6), the other two gave general information.

Participants rated their level of concern about privacy and security issues in the use of videoconferencing and online chat technologies for different activities (Table 6.11). In both cases, participants had median ratings not significantly different from the midpoint of the rating scale, indicating moderate levels of concern.

Table 6.11 Ratings of concern of online privacy and security in using videoconferencing and chat technologies in online teaching (from "Not at all concerned" scored as 1 to "Very concerned" scored as 7) (N=36)

Activities	Median (SIQR)	Z	p
Using videoconferencing technology for teaching	4.00 (2.00)	-1.18	n.s.
Using online chat technologies for teaching	3.00 (2.50)	-1.65	n.s.

In a follow-up open-ended question, four participants (11.1%) reported specific concerns regarding the use of these technologies. The responses reported a variety of areas of concern:

"pictorial or audio recording obtaining my personal data"(KSA-T1)

"No concern as long as I use it in a way that preserves my privacy" (KSA-T2)

"I am afraid that the camera will open by mistake, and if I open it on purpose, I must be wearing hijab because any of the attendees may be accompanied by a man" (KSA-T3)

"Misuse" (KSA-T4).

Participants rated their level of concern about online privacy and security issues in specific online teaching situations (Table 6.12). Two situations relating to unauthorized people attending or

interrupting sessions had median ratings significantly below the midpoint of the scale, indicating a low level of concern. All the other situations had median ratings not significantly different from the midpoint of the scale, indicating moderate levels of concern

Table 6.12 Participants' level of concern about online privacy and security in particular teaching situations (from "Not at all concerned" scored as 1 to "Very concerned" scored as 7)

Situations	Median (SIQR)	Z	p
My online lectures are being recorded without my knowledge	3.00 (2.00)	-1.84	n.s.
My online seminars are being recorded without my knowledge	4.00 (2.50)	-1.37	n.s.
My online teaching materials (e.g., slide packs, notes, reading lists) are being re-used by others without my authorization	4.00 (2.50)	-1.14	n.s.
Students not turning on their webcams during sessions	5.00 (2.00)	0.86	n.s.
Unauthorised people attending sessions	2.00 (1.50)	- 3.75	< .001
Unauthorized people interrupting sessions	2.00 (1.50)	- 2.86	< .001
Students make recordings without my permission. during OTSs (e.g., using their phone)	4.00 (2.50)	- 0.88	n.s.
Accidentally sharing the wrong window that contains private information	3.00 (2.00)	- 0.38	n.s.

In a follow-up open-ended question, only two participants (2/36, 5.5%) shared their concerns about online privacy and security in online teaching.

"concerns posted without permission" (KSA-T2)

"the survey raised their awareness of previously unconsidered concerns"(KSA-T3).

Participants rated their level of concern about online privacy and security issues in several specific online assessment and examination situations (Table 6.13). Two situations, both relating to online assessments had median ratings of 5.00, however, these were not significantly different from the midpoint of the scale, which indicates a moderate level of concern. However, two other situations,

both relating to online exams, were significantly above the midpoint of the scale, indicating high levels of concern.

Table 6.13 Participants' level of concern about online privacy and security in particular to online assessment and examination situations (from "Not at all concerned" scored as 1 to "Very concerned" scored as 7) (N=36)

Situations	Median (SIQR)	Z	p
Students colluding with each other in online individual assessments	5.00 (2.00)	1.81	n.s.
Students cheating in other ways in online assessments	5.00 (1.50)	3.11	n.s.
Students colluding with each other in an online examination	6.00 (1.00)	3.76	<.001
Students cheat in other ways in online examination	6.00 (1.00)	3.75	<.001

6.4 Discussion and Conclusions

This study investigated KSA HEI teachers' experiences and concerns regarding privacy and security in online teaching before and since the pandemic, with a focus on their use of online technologies like chat and videoconferencing.

Participants' understanding of what "online privacy and security" meant to them showed that they had generally had a good understanding of online privacy and security, especially about data protection, preventing unauthorized access and ensuring data confidentiality and integrity. Most of their concerns were about data, both personal and teaching-related, and not about their location or appearance. This might be because the study found that participants did not use webcams during online teaching, so they were less concerned about being on webcams or showing their personal space. Their main focus was on keeping data secure. Future studies could look at whether using webcams more often would make teachers more concerned about physical privacy.

RQ1 investigated participants' experience with the move to online teaching due to the pandemic. Participants went through substantial changes, with more than half moving from face-to-face teaching and almost half transitioning from a blended mode to fully online teaching. When asked about the main challenges of online teaching since the pandemic, most participants mentioned a lack of student engagement and participation. Other issues included communication problems, difficulties

with assessment and evaluation, and technology-related challenges. These findings are similar to what previous studies have reported. For example, Alammery et al. (2021) found that KSA HEI teachers faced difficulties in keeping students engaged. Meccawy et al. (2021) also pointed out that limited face-to-face interaction made it harder for teachers to explain ideas clearly and assess students properly. Likewise, Alqahtani et al. (2022) reported that poor internet connections often disrupted online OTSs.

Interestingly, participants reported no significant change in student participation across different types of teaching before and since the pandemic suggesting that efforts were made to keep student-teacher interaction steady after the move to online teaching. However, participants reported their students participated less in live sessions that were recorded compared to those that were not recorded. This result is similar across all my studies in this research programme. This shows how session format can impact student engagement in two very different educational cultures and further research could investigate how to improve online teaching practices to overcome this problem.

RQ2 examined participants' experiences with chat and videoconferencing technologies for online teaching before and since the pandemic. Videoconferencing technologies have been used much more since the pandemic showing their crucial role in facilitating online teaching. However, the results showed differences in the use of chat technologies. For asynchronous communication, there was no significant change in use. This suggests that these tools, such as email were already used before the pandemic. In contrast, the use of synchronous communication increased significantly. This may be because real-time interaction became more important during online teaching to help teachers stay connected with students. Future research should look at how synchronous communication affects participation, especially when combined with videoconferencing

KSA teachers reported that both they and their students used webcams very little, which challenges the idea that only students are hesitant to have their webcams on. As discussed in the literature review (see Section 2.3), students in different cultures are often reluctant to have their webcams on (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Dixon & Syred, 2022; Gherheş et al., 2021). The current study adds to this research by showing that teachers may also be contributing to this reluctance. This raises questions about engagement and interaction in online teaching. Visual cues, such as seeing students' faces, are important for creating connections and keeping students engaged and focused (Petchamé et al. 2022; Yarmand et al., 2021). However, the low webcam use in this study shows that both teachers and students might miss these cues, which could weaken connections in online teaching. If teachers do not have their webcams on, it might influence students to see webcams as less important. However, in the context of KSA, this behaviour may be less about individual teacher choices and more about local expectations that influence both teachers and students alike. More research is needed to further understand KSA teachers' views on webcams.

Studies could explore how teachers feel webcams affect their teaching and student engagement, and how privacy or culture play a role.

RQ3 investigated the experiences and concerns about privacy and security in the online teaching of KSA HEI teachers. Participants showed moderate concern about online privacy and security when using various devices for teaching. However, the findings found a gap between awareness and action in this area. While many teachers knew about institutional policies on privacy and security, and some mentioned that their institutions provide training, only a small number had actually received such training. This indicates that KSA HEIs need to do more to train teachers on these topics. Institutions should also encourage teachers to participate in available training and become more informed, as the low number of trained teachers is a concern. As discussed in the literature review (see Section 2.6), policies on specific issues—such as precautions for online sessions, rules for webcam use, session recordings, and security of informal tools like WhatsApp—remain unclear. This shows the need for better and more detailed policing.

Participants expressed moderate concern about privacy and security when using videoconferencing and online chat technologies. Although only a few participants reported specific concerns, these concerns were often linked to cultural and religious values. For example, accidentally turning on their webcam, especially in the presence of men which would require them to wear a hijab. As discussed in the literature review (Section 2.5), cultural values strongly influence teaching practices in KSA. Islamic traditions emphasize family privacy and community reputation, which may explain participants' concerns about online privacy and security. The strong focus on family ties and protecting personal information reflects these worries. KSA's gender-segregated education system further reinforces these privacy and security concerns. With separate facilities for male and female students, teachers may feel added pressure to maintain strict privacy practices in online teaching. This cultural context shows the need for privacy and security measures that respect local values. However, these moderate levels of concern on the part of KSA teachers are different from the very low levels of concern found among UK teachers about online privacy and security using videoconferencing and online chat technologies in Study 3. This is not surprising, given the very different cultural values in the UK.

Participants expressed different levels of concern about privacy and security in different online teaching situations. For example, there were generally low levels of concern about unauthorized people attending or disrupting online sessions, suggesting that teachers trust the security measures in place or believe such incidents are unlikely. However, other issues raised more moderate levels of concern such as students not having their webcams on, which is odd since the teachers themselves often did not have their own webcams on. Moderate levels of concerns also arose about lectures or

seminars being recorded without permission, teaching materials being reused without authorization, and students making their own recordings during sessions. These concerns might stem from teachers' fears of losing control over their content and not knowing how it might be shared or used without their consent.

In online assessments and exams, teachers were especially concerned about maintaining integrity, especially with issues like student collusion and cheating. As discussed in the literature review (Section 2.3.1) KSA HEIs made changes to their assessment methods as a result of the pandemic to address such issues. Even with these changes, teachers still have concerns about these issues. When teachers were asked about their knowledge of procedures to ensure the privacy and security of students' online work submissions none of the participants responded, indicating a concerning gap in their understanding of data privacy and security measures. Thus, HEIs need to address these knowledge gaps and provide better guidance and training to teachers.

The study had some limitations. One limitation was the relatively small sample size of 36 participants, as discussed in the UK Teacher Study 3. Also, the amount of data for the qualitative analysis was small. This is often the case with KSA participants, as they are less likely to answer open-ended questions. This was also found in KSA students in Study 2, which reduced the depth of the qualitative findings. Moreover, the results depended on the honesty and accuracy of the participants' self-reports, as mentioned in Study 1.

In conclusion, this study explored KSA HEI teachers' experiences and concerns regarding privacy and security in online teaching before and since the pandemic. The results show substantial changes for teachers, with more than half moving from face-to-face teaching and almost half changing from a blended mode to fully online teaching. The main challenges they faced were engagement, assessment and communication with students. KSA teachers had moderate levels of concerns about privacy and security, these were influenced by culture and religion in KSA. The study also found confusion around institutional policies and limited training on online privacy and security showing the need for more culturally sensitive approaches to address these challenges. Clear guidelines, better training, and ongoing discussions about privacy and security are essential for creating a safe and effective online teaching environment. An unexpected finding was the low use of webcams by both teachers and students during OTSs. This points to a need for a better understanding of the relationship between webcam use and privacy and security concerns. These issues are further examined in the next study presented in Chapter 7 which is a field study on webcam use in online teaching among KSA HE students and teachers.

Chapter 7: Study 5: A Field Study of Webcam Use in Online Teaching by KSA Higher Education Students and Teachers: The Role of Privacy, Security, and Trust

7.1 Introduction

Study 2 produced interesting findings about general attitudes toward webcam use during OTSs among KSA students, who reported very low webcam use across all types of OTSs. Study 4 found similar results among KSA teachers. This study builds on those findings by exploring the attitudes of both students and teachers in KSA, using data collected immediately after online classes. This method is more likely to capture data in detail and accurately compared to retrospective approaches.

The study also explored how privacy, security, and trust, whether interpersonal, institutional, or technological, shape students' online teaching experiences and their webcam use.

This study investigates the following research questions:

RQ1: What are the levels of webcam use among KSA HEI students and teachers in target online classes?

RQ2: What are the reasons for having webcams off among KSA HEI students and teachers in target online classes?

RQ3: What are the levels of concern about online privacy, security, and trust among HEI KSA students about various actors and entities in online teaching?

RQ4: How do KSA students' levels of trust in different actors and entities relate to their privacy and security concerns about online teaching?

RQ5: Are KSA HEI student's concerns about online teaching specific to that domain or do they reflect their general concerns about the internet?

7.2 Method

7.2.1 Design

A field study was conducted in the context of online classes at SEU in KSA. The study targeted undergraduate students taking a range of courses in CS, at all levels of undergraduate study. Students take two classes per week for a course, one online and one in person. Both classes are lectures and last one hour.

Students on the target courses were asked to complete three questionnaires: one at the start of the study, one immediately after attending an online class and one at the end of the study. The questionnaires were based on existing validated questionnaires and measured concerns about privacy, security, and trust in online teaching. Some additional questions were developed to cover concerns about online teaching not covered in previous questionnaires, such as concerns about sharing information about one's location and physical space and personal contributions during online teaching. Also, a questionnaire on social media was included as an example of a non-teaching internet domain to compare students' privacy, security and trust concerns in a different internet context with those related to online teaching. This allowed assessment of whether their concerns were specific to the online teaching situation or relevant to other online situations.

Teachers on the targeted courses completed two questionnaires: one before the study and one immediately after teaching the online class attended by students in the study. The first questionnaire asked about their attitudes towards using webcams during OTSs and their previous experiences with online teaching. The second questionnaire asked whether they had used their webcam in the class, the reasons for their choice, and their awareness of their students' webcam use during the class.

The questionnaires used a mixture of 7-point Likert rating items, multiple-choice and open-ended questions. Rating items and multiple-choice questions were compulsory, and open-ended questions were generally optional. Ethical approval for the study was obtained from both the University of York (Almekhled20221212) and SEU (SEVREC-4424).

7.2.2 Participants

Students from eight online courses participated, these courses had a total of 162 students enrolled, with course sizes ranging from 7 to 35 students. The courses covered a range of topics in CS from system integration to web technologies. Four of the courses were first-year undergraduate level, three were second-year level and one was third-year level.

116 students in total took part in the study, answering at least one of the questionnaires. 108 students responded to the pre-study questionnaire, 72 to the post-class questionnaire, and 75 to the post-study questionnaire. Demographic information for all the students who took part is shown in Table 7.1.

Table 7.1 Demographic information for the student participants in Study 5 (N = 116)

Age	
Range	20 – 45 years
Mean	28.5
Standard deviation	6.0
Gender	
Men	40 (37.0%)
Women	68 (63.0%)
Level of Study	
Year 1	32 (29.6%)
Year 2	49 (45.4%)
Year 3	27 (25.0%)

The sample had more women than men (63.0% women, 37.0% men), although the overall enrolment of women in SEU is 46.3% (2021/2022 figures, figures for 2022/2023 academic year not available).

Eight teachers participated in the study, three women and five men. Three participants had one to five years of experience of online teaching experience teaching, and the other five had six and ten years.

7.2.3 Scales and Measures

7.2.3.1 Privacy Concerns Scale

In selecting scales to measure privacy concerns, I evaluated numerous existing instruments to ensure comprehensive coverage of issues relevant to online teaching (see section 2.1.2). Table 7.2 provides an overview of the scales I considered, why they were selected or not, and any adjustments made to fit the study's focus on online teaching.

7.2.3.2 Security Behaviours and Attitudes Scales

The same process was applied to scales of security behaviours and attitudes in general (Table 7.3).

Table 7.2 Overview of the scales selected to measure online privacy concerns

Developer(s)	Scale	Rationale for Inclusion/Exclusion	Adaptations required?
Malhotra et al., 2004	IUIPC: Internet Users' concerns about the privacy of their information scale	Excluded: heavy emphasis on technology focused on general online data control, not specific to privacy concerns in teaching contexts.	N/A
Buchanan et al., 2007	Individual concerns over the security and protection of personal information	Excluded: limited focus on privacy concerns beyond personal data security.	N/A
Liu et al., 2018	Privacy risk and perceived privacy invasion	Excluded: focuses on privacy risk rather than direct privacy concerns.	N/A
Peng & Dutta, 2022	Concern for information privacy scale (CFIP)	Selected: wide coverage of privacy concerns in online teaching, addressing personal information collection, unauthorized use, access issues, and data errors, suitable for evaluating students' privacy concerns Excluded: Data Errors sub-scale: This sub-scale was excluded as it addresses concerns about errors in stored personal data, which are less relevant to immediate privacy concerns during live online classes. The study focuses on real-time privacy issues such as access to live video and chat messages, rather than long-term data management. Excluding this scale helps keep the survey concise and focused on relevant concerns during live teaching.	Yes

Kim, 2021	Privacy and security concerns in live online classes	Selected: Provides a comprehensive view of privacy and security issues related to real-time, live online classes.	No
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Table 7.3 Overview of the scales selected to measure online security behaviours and attitudes

Developer(s)	Scale	Rationale for Inclusion/Exclusion	Adaptations required
Egelman & Peer, 2015	SeBIS: Security behaviours of password choice, device security, updates, and proactive awareness	Selected: validation across multiple studies and effectiveness in predicting security behaviours and examining factors that influence security attitudes.	No
Bitton et al., 2018	ISA: Security awareness in smartphone users	Excluded: too specific to smartphone security and focusing on social engineering mitigation,	N/A
Faklaris et al., 2019	SA-6: Self-Report Measure of End-User Security Attitudes	Excluded: emphasis on intentions to follow expert advice rather than broader attitudes toward security-related behaviours	N/A

Table 7.4 Overview of scales selected to measure different forms of trust

Developer(s)	Scale	Rationale for Inclusion/Exclusion	Adaptations required
Ejdys, 2018	Trust in institution and technology, including VLE usefulness, ease of use, and institutional support	Selected: comprehensive coverage of trust within HEI settings, including student support, ethical practices, and the institution's use of technology.	Yes

Chen, 2017	Trust in institution and brand association in an educational context	Excluded: cultural and contextual differences between Taiwan and KSA, making some items less applicable for a KSA HEI setting.	N/A
Heffernan et al., 2018	Trust in institution	Excluded: designed for transnational partnerships, measures trust through dimensions such as likability, benevolence, and integrity.	N/A
Gomez et al., 2022	Teacher Confidence in using, integrating, and applying technology for student-centred learning (TICS)	Excluded: focus on teacher confidence in technology integration, beyond the scope of this study's scope	N/A
Rovai, 2001	Classroom community, focusing on emotional bonds, trust, interaction, and shared learning goals	Excluded: focus on graduate education and building community rather than trust directly	N/A
Dong et al., 2021	Trust within teacher-student relationships, including social adjustment and quality of interactions	Excluded: focus on primary education and social adjustment factors not directly relevant to higher education.	N/A
Cavanagh et al., 2018	Trust in teachers, assessing empathy, understanding, and care within an educational context	Selected: applicability to higher education and detailed focus on teacher-student trust relation.	No
Ennen et al., 2015	Trust in classmates, including trust propensity, perceived trustworthiness, cooperative behaviours, and monitoring	Excluded: high number of items (21), which may affect student responses	N/A
Rice & Schroeder, 2021	Trust in Teacher, Classmate, and Self	Selected: focus on classmates and teacher trust relevant to online teaching settings.	Yes

Table 7.5 Pre-Study Questionnaire: Scales for measuring privacy, security, and trust in online teaching

Section	Measure (items)	Source	Adaptations made
Privacy Concerns	Privacy concerns in online teaching (11)	Peng & Dutta, 2022	Adaptation for the Online Teaching Context: The statement "It usually bothers me when e-learning providers ask for personal information" was changed to "It usually bothers me when I am asked for personal information during online teaching classes" to make it more relevant to the online teaching environment.
	Privacy concerns with teachers and classmates (4)	Kim, 2021	None
Security Concerns	Security concerns in online teaching (4)	Kim, 2021	None
Trust Measures	Trust in the VLE (Blackboard)(6)	Ejdys, 2018	Replaced "Blackboard" with VLE-specific names for relevance to the SEU's online teaching context.
	Trust in the institution (7)	Ejdys, 2018	Replaced "my university" with "SEU (Saudi Electronic University)" and specified "University Student Service System" to refer to Blackboard for technological trust.
	Trust in teacher (9)	Cavanagh et al., 2018	None
	Trust in classmates (5)	Rice & Schroeder, 2021	Modified references to courses, replacing "MBSR" with course-

		specific names for relevance to the online teaching context.
Newly Developed Items	Privacy concerns about location and personal space (1) Privacy of personal contributions (3)	New

7.2.3.3 Trust Scales

For this study, I needed a scale that measures different forms of trust, for example interpersonal, institutional, and technological (see section 2.1.2). Table 7.4 provides an overview of the scales considered.

7.2.4 Online Questionnaires

All questionnaires were developed and deployed using the Qualtrics survey software (www.qualtrics.com). As in my previous studies (see section 4.2.3), all questionnaires were developed in English, translated into Arabic and checked, and then translated the Arabic version back into English for further checking.

7.2.4.1 Student Questionnaires

Pre-Study Questionnaire: measured students' privacy and security concerns about online teaching and their trust in different actors and entities in online teaching. The questionnaire included seven scales from previous studies, some adapted for use in the current context (see Table 7.5) and a number of newly developed items.

The newly developed items were designed to measure two specific categories of privacy concerns not previously studied in online teaching:

- location and personal space (1 item)
- personal contributions (3 items):
 - concerns about teachers using students' work or ideas without permission;
 - concerns that classmates might use students' contributions without consent;
 - general worries about privacy when participating in online teaching, especially involving the sharing of personal information.

Post-Class Questionnaire: gathered information about the use of webcams in the target online class. It included multiple-choice questions to report students' observations of their teacher's webcam use and asked whether students themselves used their webcams and their observations of other students' webcam use.

It provided a list of multiple-choice options about students' reasons for having their webcam off during the class (see Table 7.6). These options were developed based on previous research.

Table 7.6 Multiple choice options for provided for students' reasons for having webcams off during online classes

Category	Item Description
Privacy	I was concerned about my physical location being seen.
	I was concerned that other students made recordings or screenshots without my permission (e.g using their camera phones)
Distraction	It makes me focus on how I look instead of the course content.
	It would distract other students.
Security	I do not know who can access recordings of online sessions or where they are stored.
	I am concerned that online sessions might be hacked which will lead to the disclosure of my personal information.
Flexibility	It impairs my flexibility regarding where I can attend the session (e.g attending from a cafe)
	It makes it hard for me to move away from my computer.
	It makes it hard for me to conduct other activities during the session.
Practical	It overloads the bandwidth I have
Any other reason	Please explain briefly

For having webcam on, the following multiple-choice options were provided:

- It helped me keep focused
- It made me feel more engaged
- My teachers had their webcam on
- Other students had their webcams on
- Any other reason, please explain briefly

Post-Study Questionnaire: measured students' general online security behaviour, their concerns about online privacy on social media, and their trust in technologies in general. It included three scales from previous studies, some adapted for use in the current context (see Table 7.7).

Table 7.7 Post-Study Questionnaire: Scales to measure online security behaviour, privacy concerns, and trust in digital technologies in general

Measure (items)	Source	Adaptations
Security behaviour in general (SeBIS) (15)	Egelman & Peer 2015	None
Privacy concerns in social media sites (11)	Peng & Dutta 2022	Adapted items from "It usually bothers me when social media sites ask me for personal information context. For example, "It usually bothers me when e-learning providers ask for personal information" was changed to "It usually bothers me when social media sites ask me for personal information.
Trust in digital technologies in general (5)	Ejdys, 2018	None

A pilot study of the student questionnaires was conducted with seven undergraduate CS KSA students. They were asked to assess the clarity of the questions and the time required to complete the questionnaire. Several small adjustments to the questionnaires were made as a result.

Appendix D1 contains the full text of the student questionnaires. Appendix D2 contains the measurements used for trust, privacy, and security in online teaching and digital technologies.

7.2.4.2 Teachers' Questionnaires

Pre-Study Questionnaire: asked about teachers' ratings of their webcam use in online teaching in general. Also included demographic questions such as gender and experience of online teaching.

Post-class questionnaire: gathered information about teachers' use of their webcam in the online class. It included multiple-choice questions to indicate reasons for choosing to have their webcams on or off the online class (see Table 7.8).

Table 7.8 Multiple-choice options for teachers' reasons for keeping webcams off during online classes

Category	Item Description
Privacy	I was concerned about my physical space being seen.
	I was concerned if students made recordings or screenshots without my permission (e.g using their camera phone)
Security	I do not know who can access recordings of online sessions or where they are stored.
	I am concerned that online sessions might be hacked which will lead to the disclosure of my personal information.
Distraction	It makes me focus on how I look instead of the course content.
	It would distract the student.
Practical	It overloads the bandwidth I have
Any other reason	Please explain briefly

The multiple-choice options provided for having their webcam on were:

- It feels like my students engage more with me
- I feel my students paid attention to me
- Any other reason, please explain briefly

A pilot study was conducted with four KSA HEI teachers.

Appendix D3 contains the full text of the teachers' questionnaires.

7.2.5 Procedure

To initiate the study, I established contact with the Head of the Department of CS at SEU and requested permission to conduct the study. The Head identified suitable teachers whose courses might be included in the study. I contacted these teachers and explained the study's objectives and methodology. I asked them to provide 15 minutes at the beginning of an online class in their course so I could explain the study to the students and to provide a list of the university email addresses of students enrolled in the course. When they accepted, I sent email invitations containing all the study information to the students with an informed consent form. I briefed the online classes and explained the study to the students.

The questionnaires were emailed to students and teachers at the appropriate times: the pre-study questionnaire was sent three days before the targeted online classes, the post-class questionnaire was sent immediately after the targeted online class, and the post-study questionnaire was sent three days after the targeted online classes.

Participants were given an information sheet about the aims of the study and how their responses would be processed and stored. They were assured that their individual responses would not be shared with their teachers or the institution and that only aggregate data would be shared or made public. The study was conducted during the 2023 Spring semester.

7.2.6 Data Analysis

Responses on the Likert items were often skewed towards the lower end of the scale, so as in my previous studies non-parametric statistical methods were used. To analyse the large number of items measuring online concerns about privacy and trust, Principal Components Analysis (PCA) was used. PCA is a technique to reduce the number of variables in a set and describe the data in the smallest possible number of components with the least loss of information (Jolliffe & Cadima, 2016).

7.3 Results

7.3.1 Levels of Webcam Use among KSA HEI Students and Teachers in Target Online Classes (RQ1)

72 students completed the post-class questionnaire. All reported on their own webcam status, that of their teacher and their classmates (Table 7.9). The majority of students (58/72, 80.6%) said they had their webcams off during the online classes, while 14 (19.4%) stated they did not remember whether their webcam was on or off. None of the students reported having their webcams on.

44 students (61.1%) said their teacher's webcam was off, while 28 students (38.8%) reported that they did not notice the teacher's webcam status. No students reported that their teacher had their webcam on. 58 students (83.3%) reported that their classmates' webcams were off, 12 (16.7%) that they did not notice the webcam status of their classmates, and only two students (2.8%) reported seeing classmates with their webcams on. These results confirm that students and teachers rarely had their webcams on during the target online class.

Table 7.9 Students reported webcam status for themselves, teachers, and classmates in the target online class

Category	Webcam Status	N (%)
Students' own webcam use	Webcam off	58 (80.6%)
	Did not remember	14 (19.4%)
	Webcam on	0
Teachers' webcam status	Webcam off	44 (61.1%)
	Did not notice	28 (38.8%)
	Webcam on	0
Classmates' webcam status	Webcam off	58 (83.3%)
	Did not notice	12 (16.7%)
	Webcam on	2 (2.8%)

7.3.2 Reasons for having Webcams Off among KSA HEI Students and Teachers in Target Online Classes (RQ2)

72 students completed the post-class questionnaire. All students replied as to why they had their webcams off from the set of options provided (see Table 7.10). Flexibility reasons were the most frequently selected, with a majority of students (42/72, 58.3%) choosing at least one reason in this category. Less than half of students (29/72, 40.3%) reported that "it impairs my flexibility of where I

can attend the session," while others noted that "it makes it hard for me to move away from my computer" or "it makes it hard for me to conduct other activities during the session." These findings show that students prefer options that give them more flexibility to balance their studies with personal responsibilities.

Privacy concerns were also frequently selected, with a majority of students (37/72, 51.4%) choosing at least one reason in this category. More than one-third of students (27/72, 37.5%) reported that "I was concerned about my physical location being seen". Distraction reasons were also frequently selected, with a majority of students (37/72, 51.4%) choosing at least one reason in this category. Nearly one-third of students (23/72, 31.9%) reported "It makes me focus on how I look instead of the course content." These findings suggest that students feel that having their webcam on makes it harder to concentrate during online classes.

Security concerns were less frequently selected, with less than half of students (33 /72, 45.8%) choosing at least one reason in this category. One-third of students (22/72, 30.6%) reported: "I do not know who can access recordings of online sessions or where they are stored." This indicates their unease about how their personal data and recorded sessions are managed in online classes. Practical concerns were also less frequently selected, with a quarter of participants (18/72, 25.0%) choosing at least one reason in this category. This shows that practical concerns were not a major issue for most students. Finally, a smaller number of students gave other reasons, such as "not being required by their teacher to turn the webcam on." This suggests that institutional policies and classroom rules influence students' choices about using webcams.

Table 7.10 Reasons given by students as to why they had their webcam off in post-class questionnaire (N = 72)

Category	Item Description	N (%)
Privacy	I was concerned about my physical location being seen	27 (37.5%)
	I was concerned that other students made recordings or screenshots without my permission (e.g using their camera phones)	10 (13.9%)
	Total of participants who selected at least one privacy reason	37 (51.4%)
Distraction	It makes me focus on how I look instead of the course content	23 (31.9%)
	It would distract other students	14 (19.4 %)
	Total of participants selected at least one distraction reason	37 (51.4%)
Security	I do not know who can access recordings of online sessions or where they are stored	22 (30.6%)
	I am concerned that online sessions might be hacked which will lead to the disclosure of my personal information	14 (19.4%)
	Total of participants who selected at least one security reason	33 (45.8%)
Flexibility	It impairs my flexibility of where I can attend the session from (e.g attending from a cafe)	29 (40.3%)
	It makes it hard for me to move away from my computer	26 (36.1%)
	It makes it hard for me to conduct other activities during the session	28 (38.9%)
	Total of participants who selected at least one flexibility reason	42 (58.3%)

Practical	It overloads the bandwidth I have	18 (25.0%)
Other	Not required by their teacher to turn the webcam on	5 (6.9%)

All eight teachers completed the pre-study questionnaire. All rated how often they were turned on their webcam during online classes in general. They rated their frequency of having their webcam on as very low (median: 1.00, SIQR:1.50), significantly below the midpoint of the scale ($z = -2.28$, $p < .001$).

All teachers completed the post-online class questionnaire on their webcam status. All reported that they had the webcam off and gave a number of reasons why from the set of options (Table 7.11). Distraction reasons were the most frequently selected, with a majority of participants (5/8, 62.5%) choosing at least one reason in this category. Half of the teachers (4/8, 50.0%) reported that "it would distract the student". This indicates that teachers are concerned about the potential impact of webcam use on their own focus and their students' attention during online classes. Security concerns were also frequently mentioned, with half of the teachers (4/8, 50.0%) choosing at least one reason in this category. One-quarter of teachers (2/8, 25.0%) expressed concerns such as "not knowing who can access recordings of online sessions or where they are stored" and "online sessions might be hacked, which will lead to the disclosure of my personal information." This shows that security is an important factor influencing teachers' decisions about webcam use.

Privacy concerns were less frequently mentioned, with more than one-third of the teachers (3/8, 37.5%) choosing at least one reason in this category. One-quarter of teachers (2/8, 25.0%) were concerned about "my physical space being seen" or "students making recordings or screenshots without my permission." This was an unexpected result, as I initially thought privacy would be the main reason for not using webcams.

Practical concerns were less commonly reported but were mentioned by more than one-third of teachers (37.5%). Many reported that "it overloads the bandwidth I have," reflecting the technical challenges they face when using webcams. A small number of teachers (noted that "it's a common practice in our University not to appear on screen during online sessions," indicating that institutional norms influence their decisions.

Table 7.11 Reasons given by teachers for why they have their webcam off in post-class questionnaire (N = 8)

Category	Item Description	N (%)
Privacy	I was concerned about my physical space being seen	2 (25.0%)
	I was concerned if students made recordings or screenshots without my permission (e.g using their camera phone)	2 (25.0%)
	Total of participants who selected at least one privacy reason	3 (37.5%)

Security	I do not know who can access recordings of online sessions or where they are stored	2 (25.0%)
	I am concerned that online sessions might be hacked which will lead to the disclosure of my personal information	2 (25.0%)
	Total of participants who selected at least one security reason	4 (50.0%)
Distraction	It makes me focus on how I look instead of the course content	2 (25.0%)
	It would distract the student	4 (50.0%)
	Total of participants who selected at least one distraction reason	5 (62.5%)
Practical	It overloads the bandwidth I have	3 (37.5%)
Other	It's a common practice in our University not to show up during online sessions	2 (25.0%)

7.3.3 Initial Analysis of the Privacy, Security and Trust in Online Teaching Questions

Separate PCAs were conducted on the ratings of privacy, security concerns and trust in the students' Pre-Study Questionnaire to investigate whether they formed meaningful components.

The PCA on the privacy concerns ratings produced an optimal solution with five components that accounted for 70.0% of the variance (Table 7.12):

- *Institutions' use and protection of students' personal information* (accounted for 24.5% of the variance): focused on concerns about how HEIs handle and protect students' personal data, emphasizing trust and ethical use.
- *Information collection by the institution* (21.8%): reflected concerns about the extent and purpose of data collection by HEIs or systems.
- *Unauthorized information use by teachers and classmates* (9.1%): captured concerns about misuse of personal information by peers or teachers during online classes.
- *Privacy during online teaching (in relation to teachers and classmates)* (7.1%): captured concerns about visibility (e.g., physical space) and unauthorized use of contributions (e.g., work or ideas). Despite the small proportion of the variance accounted for, this component introduces new areas of privacy concerns.
- *Unauthorized use by the institution* (6.5%): related to concerns that HEIs may use personal information for unauthorized purposes.

Table 7.12 PCA components on ratings of privacy concerns about online teaching with % variance explained.

Component 1: Institutional use and protection of student's personal information (24.5%)	Source
Universities should never sell students' personal information to another organization.	Adapted from Peng & Dutta, 2022
Universities should not share students' personal information with other organizations unless it has been authorised by the students.	
Universities should devote more time and effort to preventing unauthorised access to students' personal information.	
Universities should prevent unauthorised people from accessing students' personal information without considering the cost.	
Universities should take more measures to ensure that unauthorised people cannot access students' personal information.	
Component 2: Information collection by institution (21.8%)	
It usually bothers me when I am asked for personal information during online teaching classes.	Adapted from Peng & Dutta, 2022
I sometimes think for a while if I am asked to provide personal information during online teaching classes.	
It bothers me to give personal information to so many different courses for online teaching.	
It bothers me that so much personal information is collected during online teaching courses.	
Component 3: Unauthorised information use by teachers and classmates (9.1%)	
I am concerned that another student will use my personal information (e.g. captured facial images) without my permission.	Adapted from Kim, 2021
I am concerned that my personal information will be leaked by another student against my will.	
I am concerned about my personal information (e.g. my face, name, etc.) being exposed online.	
Component 4: Privacy during online teaching (in relation to teachers and classmates) (7.1%)	
I am not comfortable with my physical location and personal space (e.g. my room, my whereabouts etc.) being seen by other participants in online teaching classes.	Newly developed Items
I am concerned that my teacher will use my contribution to an online class (e.g. my work being used as an example) without my permission.	
I am concerned that my classmates will use my contribution to an online class (e.g. my idea provided in an online group discussion) without my permission.	

Overall, I am concerned about my personal information when participating in online class activities (e.g. online group discussions)	
Component 5: Unauthorised information use by institutions (6.5%)	
Universities should never use students' personal information for any other purposes unless it has been authorized by the individual student.	Adapted from Peng & Dutta, 2022
When students give personal information during online teaching classes for some particular reason, the university should never use the information for any other purpose.	

The PCA of the trust questions produced an optimal solution with four components that accounted for 62.4% of the variance (Table 7.13).

- *Trust in the teacher* (accounted for 26.4% of the variance): included statements which were related to the teacher-student relationship and the perceived supportiveness of the teacher.
- *Trust in institution* (15.7%): included statements related to the university's care for its students, graduates' employability, ethical principles, personal development opportunities, international recognition, and the use of technology.
- *Trust in classmates* (11.4%): included statements related to trustworthiness, friendliness, reliability, and consideration among classmates.
- *Trust in the VLE* (8.9%): included statements related to aspects such as anonymity guarantees, and the ability to express.

Table 7.13 PCA component on ratings of trust in online teaching with % variance explained

Component 1: Trust in Teacher (26.4%)	Source
My teacher can be described as someone who listens very carefully to me	Adapted from Cavanagh et al., 2018
It's important for my teacher to understand what my educational goals are	
My teacher understands me	
My teacher accepts me for who I am	
My teacher is careful not to dismiss my concerns	
My teacher cares about my education	
My teacher truly cares about my educational welfare	
Component 2: Trust in institution (15.7%)	
(Name of institution) takes care of its students	Adapted from Ejdy, 2018
Graduates of (name of institution) have no problem finding a job in their profession.	
(Name of institution) is well recognised by employers in the labour market	
(Name of institution) applies the principles of ethics and social responsibility in its activities	

(Name of institution) provides opportunities for students' personal development	
(Name of institution) is recognised internationally	
(Name of institution) uses new technology to improve my studies and gain knowledge and skills	
Component 3: Trust in classmates (11.4 %)	
Overall, the students in my (name of course) class are very trustworthy	
The students in my (name of course) class are friendly	
I can rely on my (name of course) classmates	Adapted from Rice & Schroeder, 2021
I trust that my (name of course) classmates will keep my personal information confidential.	
We are usually considerate of one another's feelings in this (name of course) class.	
Component 4: Trust in the VLE (8.9%)	
(Name of VLE) guarantees the anonymity of users	
In (name of VLE), I can express my opinion about studies, subjects and teachers without any fear.	
(Name of VLE) ensures the security of my personal data	Adapted from Ejdys, 2018
(Names of VLE) is efficient and always works reliably	
I can rely on (name of VLE)	

For the four questions about security concerns about online teaching, all items correlated with each other at $p < 0.001$ (Spearman correlations), so these were treated as one component, *Security concerns about online teaching* (Table 7.14).

For each of these components, an overall median of the items was calculated for further analysis.

Table 7.14 Security component resulting from the items about security concerns about online teaching (Adapted from Kim, 2021)

I do not feel secure about the online teaching resources and tools used in my online teaching classes.
I am concerned that online teaching resources and tools will not implement appropriate security measures for my protection.
I am concerned that hacking might occur during online teaching classes which will lead to the disclosure of my personal information.
I am concerned about online teaching resources.

7.3.4 Levels of Concern about Security and Privacy and Trust in a Range of Actors and Entities in Online Teaching (RQ3)

To investigate students' levels of concern about privacy in online teaching, their scores on each of the components from the PCA were calculated by taking the median of the relevant items. The same

procedure was followed for the ratings of concerns about security and the level of trust in different actors and entities in online teaching.

Students' component scores on the five components of concern about privacy in online teaching are summarized in Table 7.15, showing significantly high levels of concern about *Institutional use and protection of students' personal information*, *Information collection by institutions*, and *Unauthorised information use by institutions*, but only moderate levels of concern (not significantly different from the midpoint of the scale) about *Unauthorised information use by teachers and classmates* and *Privacy during online teaching (in relation to teachers and classmates)*. Thus, students' privacy concerns are related to their institution and the information it might collect about them and how it would use that information, but not their teachers or their classmates to such an extent.

Students' component scores on their *Security concerns in online teaching* are also given in Table 7.15. These scores did not differ significantly from the midpoint on the scale, showing the students had moderate levels of concern about security in online teaching.

Finally, students' scores on their trust in different actors and entities are summarized in Table 7.16, showing that students had significantly high levels of trust in their classmates and the VLE used for online teaching (in their case the VLE was Blackboard), moderate levels of trust in the institution (the scores did not differ significantly from the midpoint of the scale) and significantly low levels of trust in their teacher.

Table 7.15 Participants' levels of concern about privacy and security in online teaching

	Median (SIQR)	Z	p
Privacy concerns in online teaching ...			
Institution use and protection of students' personal information	7.00 (0.00)	9.40	<.001
Unauthorised information use by institution	7.00 (0.25)	9.01	<.001
Information collection by institution	5.25 (1.13)	4.49	<.001
Privacy during online teaching (in relation to teachers and classmates)	4.75 (1.35)	1.74	n.s.
Unauthorised information use by teachers and classmates	4.50 (2.09)	1.39	n.s.
Security concerns in online teaching	4.00 (2.00)	0.55	n.s.

Table 7.16 Participants' levels of trust in different actors

Trust in	Median (SIQR)	Z	p
Teachers	2.00 (1.75)	-4.49	< .001
Institution	4.00 (1.25)	1.47	n.s.
Classmates	6.00 (1.50)	5.51	< .001
VLE	6.00 (1.50)	5.83	< .001

7.3.5 Relationship Between Trust in Different Actors and Entities, Security and Privacy Concerns in Online Teaching (RQ4)

To investigate the relationships between students' trust in different actors and entities in online teaching and their online privacy concerns, Spearman correlations were calculated between the trust and privacy components (Table 7.17). There was a significant positive correlation between concerns about *Information collection by institutions* and *Trust in institutions*. This is in a counter-intuitive direction, as one would expect that as trust in the institution increases, concern about privacy issues related to information collection by the institution would decrease. However, although some students may have general trust in their institution, they still have concerns about the information the institution is collecting about them. Interestingly, there were no other significant correlations between trust in the institution and privacy concerns, for example, there was no negative correlation between trust in the institution and the institution's unauthorized use of information.

There was also a significant positive correlation between *Privacy during online teaching (in relation to Teachers and classmates)* and *Trust in Teachers*. The direction of this correlation is also counter-intuitive, as one would expect that as *Trust in Teachers* increases, concern about privacy during online teaching in relation to teachers and classmates would decrease. As with *Trust in the Institution*, there were no other significant correlations, particularly between *Trust in Teachers* and *Unauthorised information use by Teachers and classmates*.

There was also a significant positive correlation between the *Unauthorised use of information by institutions* and *Trust in VLE*. This was another unexpected correlation, although the link between the institution and the VLE is not necessarily clear. Do students see the VLE as "belonging" to the institution or as an entirely separate entity? These counter-intuitive correlations suggest that trust in

actors and entities in online teaching is separate from possible privacy concerns about them. This possibility clearly needs further investigation.

Finally, there was a significant negative correlation between *Privacy during online teaching (in relation to Teachers and classmates)* and *Trust in classmates*. This is a correlation in the expected direction, in that as trust in classmates increases, privacy concerns decrease. Interestingly, this relationship is with classmates, which suggests that because students know each other personally, their perception of trust in their classmates is of a different nature to their perception of other, more remote and in some cases abstract, actors and entities.

To investigate the possible relationships between students' trust in different actors in online teaching and their online security concerns in online teaching, Spearman correlations were also calculated between these components. There was no significant correlation between *Security concerns in online teaching* and trust in any of the different actors and entities in online teaching. These results were unexpected.

Table 7.17 Significant Spearman correlations between privacy concerns and trust in different actors and entities in online teaching

	Teachers	Institution	Classmates	VLE
Institutional use and protection of students' personal information				
Information collection by institution		< .005		
Unauthorised information use by Teachers and classmates				
Privacy during online teaching (in relation to teachers and classmates)	< .005		< .05 neg	
Unauthorised information use by institution			< .05	< .05

7.3.6 Initial Analysis of the Privacy in Social Media, Security and Trust Technology in General Questions

75 students answered the post-study questionnaire with questions about concerns about privacy in social media, security, and trust in technology in general. The PCA on the privacy concern questions produced an optimal solution with three components accounting for 71.3% of the variance (Table 7.18).

- *Privacy of Personal Information component* (accounting for 43.4% of the variance): and included statements which were related to the privacy of personal information on social media sites.
- *Data collection and use by SM sites* (17.9%): included statements related to attitudes and concerns about the collection and use of personal data by social media sites.
- *Data misuse* (10.6%): included statements that capture concerns about the potential misuse of personal information on social media.

Table 7.18 PCA components on ratings of privacy concerns in social media with% variance explained

Component 1: Privacy of personal information (43.4%)	Source
Social media sites should never use individuals' personal information for any other purposes unless it has been authorized by the individual.	Adapted from Peng & Dutta, 2022
Social media sites should never sell individuals' personal information to another organization.	
Social media sites should not share individuals' personal information with other organizations unless it has been authorized by the individuals.	
Social media sites should devote more time and effort to preventing unauthorized access to individuals' personal information.	
Social media sites should prevent unauthorized people from accessing individuals' personal information without considering the cost.	
Component 2: Data collection and use by SM sites (17.9%)	
It usually bothers me when social media sites ask me for personal information.	Adapted from Peng & Dutta, 2022
I sometimes think for a while when social media sites ask me to provide personal information.	
It bothers me to give personal information to so many social media sites.	
It bothers me that social media sites collect too much personal information.	
When people give personal information to a social media site for some reason, the social media site should never use the information for any other purpose.	
Social media sites should take more measures to ensure that unauthorized people cannot use their computers to access individuals' personal information.	
Component 3: Data misuse (10.6%)	
I am concerned that participants on a social media site will use my personal information (e.g. captured facial images, name, etc.) for other purposes without my permission	Adapted from Kim, 2021

I am not comfortable with my personal details (e.g. photos, name, etc.) being available to other participants on social media sites

I am concerned that my personal information will be leaked by participants on a social media site against my will

The PCA of the general security behaviour questions produced an optimal solution with four components that accounted for 54.2% of the variance (Table 7.19).

- *Security Care* (accounted for 18.7% of the variance): included statements which focused on actions related to actively managing and maintaining one's cybersecurity measures, such as using strong, unique passwords and keeping software updated.
- *Proactive Awareness* (16.0%): included statements that related to being aware of potential cybersecurity threats, such as verifying links before clicking and being cautious about opening links from unknown sources.
- *Device Securement* (10.1%): included statements related to securing electronic devices, such as computers, laptops, tablets, and mobile phones, through measures like using passwords or passcodes to unlock devices and manually locking screens when stepping away.
- *Security Slackness* (9.3%): included statements related to behaviours that indicate a lack of attention or concern regarding cybersecurity, such as not changing passwords regularly and delaying software updates.

Table 7.19 PCA components on ratings of general security behaviour with% variance explained (Adapted from Egelman & Peer, 2015)

Component 1: Security Care (18.7%)
I use different passwords for different accounts that I have.
When I create a new online account, I try to use a password that goes beyond the site's minimum requirements.
When browsing websites, I mouseover links to see where they go, before clicking them.
I try to make sure that the programs I use are up to date.
I verify that my anti-virus software has been regularly updating itself.
Component 2: Proactive Awareness (16.0%)
When someone sends me a link, I open it without first verifying where it goes.
I know what website I'm visiting based on its look and feel, rather than by looking at the URL bar.
I submit information to websites without first verifying that it will be sent securely (e.g., SSL, "https://", a lock icon).
Component 3: Device Securement (10.1%)
I use a password/passcode to unlock my laptop or tablet.
I manually lock my computer screen when I step away from it.
I use a PIN or passcode to unlock my mobile phone.
Component 4: Security Slackness (9.3%)
I do not change my passwords unless I have to.
I do not include special characters in my password if it's not required.
When I'm prompted about a software update, I install it right away. (neg)

Regarding trust in technology in general, all items correlated at $p < .001$ (Spearman correlations), so these were treated as one component, *General trust in technology* (see Table 7.20).

Table 7.20 Component resulting from the PCA on ratings of trust in technology in general (Adapted from Ejdys, 2018)

Due to the ICT technology, our lives are easier and more comfortable
Due to ICT technology, our lives are safer
Science and technology are making our lives better
Science and technology are making our lives easier
I believe that new technologies are created for the good

7.3.7 KSA HEI Students Specific Concerns about Online Teaching and the Internet in General (RQ5)

To investigate if KSA students have specific concerns about online teaching or if their concerns are more generally about the Internet, Spearman correlations were conducted between specific privacy and security in online teaching and trust related to OTEs and students' general security behaviours, their privacy concerns on social media (as an example of a non-teaching Internet domain), their trust in technology. Social media was included as it allowed me to see if students' privacy concerns were limited to online teaching or also applied to other areas of internet use. However, there were no significant correlations among these variables.

7.4 Discussion and Conclusions

This study conducted a field study that collected data immediately after targeting online classes to investigate the levels of webcam use and the reasons why students and teachers at KSA HEIs choose to turn off their webcams. In addition, the study explored the relationship between privacy and security concerns of students, their level of trust in the various actors and entities involved in online teaching, and how these variables are interrelated. Finally, it investigated whether students' concerns about online teaching are specific to that domain or reflect their general concerns about the internet.

In relation to RQ1, the finding that no students reported having their webcams on during targeted online classes agrees with previous research from several countries which shows that students are generally reluctant to use webcams during online classes (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Dixon & Syred, 2022; Gherheş et al., 2021). Similarly, this study's findings are

consistent with Study 2, which showed that students in KSA reported very low webcam use generally. This study also found that no teachers reported using their webcams during targeted online classes, which is similar to the findings of Study 4, where KSA teachers also reported very limited webcam use.

In addition, a majority of students reported both all of their teachers and their classmates kept their webcams off during targeted online classes. Also, some students did not even notice the webcam status of their teachers or classmates, which suggests a general disinterest or acceptance of webcams being off. By combining the results of general attitudes toward webcam use from Studies 2 and 4 with the data collected immediately after targeted online classes, this study offers a clearer and more detailed picture of webcam use in KSA's online classes. The fact that neither students nor teachers have their webcams on could lead to a lack of engagement in OTSs. Further research is needed on how the lack of visual interaction affects KSA teachers and students in online teaching.

RQ2 examined of reasons for having webcams off among students and teachers in targeted online classes. The findings of this study provide interesting insights into why students and teachers choose to keep their webcams off during online classes. For students, flexibility was the most common reason for not using webcams. Many reported that using webcams made it harder for them to attend sessions from different locations or do other tasks during the session. This shows that students value flexibility in balancing their studies with personal responsibilities. Interestingly, previous studies have not identified flexibility as a reason for avoiding webcam use in online classes (see Section 2.2).

For teachers, distraction was the most common reason for not using webcams. Many KSA teachers noted that webcams could distract students, as they might focus on their teachers on the screen rather than on the lesson. This raises a question about the type of interaction KSA teachers focus on in online teaching. Since both teachers and students do not use webcams, do they rely more on verbal interaction, with students participating through microphones or chat tools? Privacy was also an important concern for both students and teachers. Most students and teachers reported concern about showing their physical location during online classes. This agrees with Rajab & Soheib (2021), which identified privacy of the home and physical location as key reasons for avoiding webcam use among medical students in KSA. As discussed in the literature review (see Section 2.6), privacy is deeply rooted in Saudi culture, shaping social behaviours and interactions. This cultural context helps explain the reluctance among both teachers and students to use webcams indicating a collective sensitivity to home and physical location visibility. Security concerns were also commonly mentioned by both groups. Participants expressed unease about data security and who could access recordings of online classes. Addressing these concerns through better data protection practices and clear communication about how recordings are stored and used can help build trust in OTEs.

In relation to RQ3, students showed high levels of privacy concerns about their institution, but only moderate levels of concern about their teachers and classmates and security in online teaching. This raises important questions about how HEIs deal with the privacy of students' information and how they communicate their policies and actions in that area to students. The levels of trust in actors and entities in online teaching also produced interesting results, with high levels of trust in classmates and the VLE but low levels of trust in teachers. Again, this raises important questions for HEI staff (and institutions employing them), as to why students appear not to trust them.

In relation to RQ4, the correlations between privacy and security concerns among KSA HEI students and their trust in various actors and entities in online teaching revealed complex and somewhat perplexing results. While there were a number of significant correlations, they were not always the ones I predicted, with increased concerns about the institution and teachers correlating with increased trust. This suggests that having a high level of concern about privacy does not necessarily mean a lack of trust; in fact, it may be associated with a higher level of trust. Clearly, the relationship between these variables in online teaching needs further investigation. These findings are interesting about issues raised in the literature, which emphasise the importance of transparent and responsible information handling in building institutional trust (Teng & Song, 2022). According to Anwar and Greer (2012), institutions should address privacy concerns and demonstrate ethical conduct to establish and uphold trust emphasizing the importance of transparent data practices. Ejdy (2018) also noted the significance of institutional trust in the implementation, adaptation, and use of new technologies, especially in the public sector. Together, these sources underline that effective use of technology is not just about functionality—it also requires addressing users' expectations around privacy, ethical data use, and transparency. The unexpected positive correlation between privacy concerns during online teaching and trust in teachers is also interesting. Contrary to expectations, increased privacy concerns were positively associated with higher levels of trust in teachers. This finding does not agree with the idea that a positive teacher-student relationship, extending beyond academic matters to include personal understanding, respect, and a genuine concern for the student's well-being and educational success, contributes significantly to building trust in teachers. This result raises questions about the role of privacy perceptions in shaping interpersonal relationships within online teaching.

In relation to RQ5, there were no significant correlations between students' general security behaviours, their privacy concerns on social media, their trust in technology, and their specific concerns and trust related to OTEs. This result is surprising, as one might expect that general attitudes towards technology and privacy and security would impact perceptions of online educational tools. The lack of significant correlations suggests a potential difference in how students perceive technology

use in educational vs. other, including personal contexts. This finding suggests further investigation into why and how students differentiate between these areas.

The study had a number of limitations which need addressing. The first is related to the cultural and linguistic context. All the questionnaires used in the research were translated into Arabic from English due to the absence of prior validation with Saudi participants. The original validation of these instruments was conducted with samples from North America, Europe, and East Asia, so their validity for the Saudi context is not established.

Secondly, the results relied on the honesty and accuracy of participants' self-reports. Given that the study focuses on online teaching, students were assured that their individual responses would remain confidential and would not be shared with their teachers or the institution. Despite this, students may have felt hesitant to answer certain questions entirely honestly, perhaps out of concern for privacy or potential repercussions. Teachers, on the other hand, may have experienced similar hesitations, especially if their responses might reflect their teaching practices. But even if participants are trying to be honest, it may have been difficult to be accurate to answer in terms of largely rating items. Triangulation with other research methods such as interviews and logging actual behaviour (which may raise serious ethical issues) is clearly needed to explore the issues further.

Thirdly, although I found that Saudi participants were less likely to respond to open-ended questions, so I avoided asking them too many open-ended questions by using rating items and multiple-choice options wherever possible. In retrospect, it might have been better to include more open-ended questions, especially concerning why participants did not use their webcams during online classes.

In conclusion, this field study collected data immediately after target online classes to investigate the levels of webcam use, exploring why students and teachers at KSA HEIs turn off their webcams, the relationship between privacy and security concerns, trust in online teaching, and whether these concerns are specific to online education or general internet use. The findings show a widespread reluctance to use webcams. Students most frequently kept their webcams off due to flexibility, distractions, and privacy concerns, while teachers cited distraction and security as their primary reasons. Although students expressed high levels of privacy concern about their institutions, they reported only moderate levels of concern about teachers and classmates. Interestingly, privacy concerns were positively associated with trust in teachers, suggesting a complex relationship that warrants further investigation. The study also found that students differentiate privacy concerns in personal and educational contexts indicating the need for tailored strategies to address each. Overall, the findings emphasize the importance of institutional transparency and ethical data handling in

building trust. Further research is needed to explore how these concerns affect engagement and the effectiveness of OTEs.

The next chapter will further explore these themes by focusing on KSA HEI teachers' attitudes toward online teaching, webcam use, and privacy concerns, both before and since the pandemic. It will investigate how teachers perceive the impact of webcam use on their teaching experiences and their students.

Chapter 8: Study 6: Webcam Use, Privacy, and Security Concerns in Online Teaching: Experiences of KSA HEI Teachers

8.1 Introduction

As discussed in the literature review (Section 2.2), a number of studies have investigated HEI students' perceptions of webcam use in OTSs since the pandemic (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Dixon & Syred, 2022; Gherheş et al., 2021; Rajab & Soheib, 2021). These studies were conducted in a variety of countries including Germany, the USA, the UK, Romania, and Saudi Arabia. Few studies, however, have explored teachers' perceptions of student webcam use on OTSs, especially the challenges they face in engaging students and building a classroom community without students being necessarily visible to them via a webcam, as reported by teachers in the USA and Romania (Yarmand et al., 2021; Hosszu et al., 2021).

Study 5 involved a field study conducted in the context of online classes in KSA. Eight teachers leading a number of courses completed a questionnaire immediately after an online class, which asked whether they used their webcam during the class. The study found that these teachers were reluctant to turn on their webcams during online classes.

I could not find any research examining KSA HEI teachers' webcam use and associated privacy and security concerns, especially in the context of changes due to the pandemic. Thus, this chapter aims to explore in greater depth KSA HEI teachers' webcam use and their experiences with privacy and security concerns.

This study investigates the following research questions:

RQ1: How has the use of videoconferencing technology, particularly the use of webcams in OTSs, and concerns about privacy and security in online teaching changed for KSA HEI teachers due to the pandemic?

RQ2: What are KSA HEI teachers' current perceptions of the impact of webcam use on their own teaching experiences and their students' experiences in online teaching?

RQ3: What are KSA HEI teachers' experiences regarding institutional policies on webcam use in online classes, and instances of privacy and security breaches?

8.2 Method

8.2.1 Design

The study used an online questionnaire administered to a sample of KSA HEI teachers. It builds on Study 5, the field study of KSA teachers, aiming to understand in more detail their perceptions of webcam use and privacy and security concerns.

The questionnaire explored KSA HEI teachers' experience of online teaching, webcam use during OTSs, and concerns about privacy and security especially in the context of changes due to the pandemic.

The first section of the questionnaire addressed teachers' experience with online teaching and webcams, including:

- Experience of online teaching before and since the pandemic
- Frequency of webcam use during various types of OTSs before and since the pandemic
- Privacy and security concerns before and since the pandemic
- Precautions taken to address these concerns

The second section explored teachers' perspectives on how webcam use affects their own teaching experience and that of their students. The final section examined participants' experiences with institutional policies and guidance on webcam use. It assessed the existence and monitoring of these policies, participants' views on their adequacy, and opinions on whether teachers should use webcams. Participants were also asked about any experiences with privacy or security breaches and how they managed these situations.

As with my other studies, the questionnaire used a mixture of 7-point Likert rating items, multiple-choice questions, and open-ended questions. Ethical approval for the study was obtained from the Physical Sciences Ethics Committee of the University (Almekhled20230619).

8.2.2 Participants

A total 116 of teachers responded, but data from 13 were discarded because they did not meet the criteria of completing at least 75% of the questionnaire, leaving a sample of 103 participants. Demographic information for the participants is shown in Table 8.1.

Table 8.1 Demographic information for the participants in Study 6 (N=103)

Age	
Range	27 – 57 years
Mean	37.1
Gender	
Men	42 (40.8%)
Women	61 (59.2%)
Highest level of education	
Bachelor	4 (3.9%)
Masters	48 (46.6%)
PhD	49 (47.6%)
Area of teaching	
Arts/Humanities	23 (22.3%)
Administrative and Financial sciences	21 (20.4%)
CS and Engineering	33 (3.0%)
Medical Sciences and Health Science	12 (11.6%)
Physical sciences (e.g., physics, chemistry)	4 (3.9%)
Social sciences (e.g., psychology, sociology)	6 (5.9%)

The sample was slightly skewed toward women (61, 59.0%). Nearly half the participants (47.6%) had a PhD or a master's degree (46.6%), while four (3.9%) had only a bachelor's degree. This high educational level is typical for HEI settings in KSA. More than one-third of participants taught in CS and engineering departments, while others taught in administrative, financial, arts, humanities, medical, health sciences, social sciences, or physical sciences fields. The sample included participants teaching a wide range of subjects, although the balance was more toward CS. I searched through various resources, including the Saudi Ministry of Education and academic publications, but I could not find statistics on the distribution of KSA HEI teachers by discipline. Thus, it is unclear how well my sample matches the overall KSA HEI teacher population.

8.2.3 Online Questionnaire

The online questionnaire was developed and deployed in the Qualtrics survey software (www.qualtrics.com). Participants were provided with an information screen outlining the study objectives, and the processing and storage procedures for their responses, and were asked to explicitly

indicate their informed consent to participate. The questionnaire used a mixture of rating scales, with some multiple-choice and open-ended questions.

The full questionnaire can be found in Appendix E1.

The five sections of the questionnaire were:

Section 1. Teachers' use of online teaching, webcams, and privacy and security concerns before the pandemic: included a rating item about participants' level of online teaching experience. Participants also rated the frequency of having their webcams on during different types of OTSs, and their privacy and security concerns during online teaching. A follow-up open-ended question asked them to elaborate on those concerns.

Section 2. Teachers' use of online teaching, webcams, and privacy and security concerns since the pandemic: The questions included those asked in Section 1 but in this section, since the pandemic. In addition, a rating item asked about participants' level of precautions taken to preserve their online privacy and security during OTSs, with a follow-up open-ended question asking them to explain the precautions they took. A multiple-choice question asked participants whether having their webcam on during OTSs made them feel uncomfortable, and a follow-up open-ended question asked them to explain why they felt uncomfortable.

Section 3. Teachers' current perceptions about the impact of webcam use on themselves and their students in OTSs: In an open-ended question, participants provided their perceptions of how using webcams in online teaching impacted them. Rating items asked for their level of agreement or disagreement with statements regarding the impact of webcam use on them as teachers:

- Students having their webcams on positively impacts my ability to gauge their understanding and participation.
- It is easier to engage with students who have their webcams turned on.
- Students' use of webcams enhances the overall online class dynamic.

A follow-up open-ended question, asked about participants thoughts on how having their webcam on or off influences students' experiences.

Section 4. Institutional policies on webcam use and teachers' experiences with privacy and security concerns and breaches in online teaching: a multiple-choice question asked participants whether their institution has a policy about whether teachers should have their webcams on during OTSs with follow-up open-ended question asking for information about such institutional policies. A multiple-choice question asked whether participants knew how the policy on webcam use during OTSs is monitored. Rating items asked for participants' level of agreement or disagreement with

the statement about whether their institution provided adequate guidance and resources on privacy and security during OTSs. A follow-up open-ended question asked participants for their views on the institution's guidance. Then a multiple-choice question asked participants whether they personally think that teachers should have their webcams on during OTSs.

A multiple-choice question asked whether participants had ever experienced any privacy or security breaches during OTSs with a follow-up open-ended question asking for any experience.

Section 5. Demographics: questions on age, gender, highest educational level and the subject areas they taught.

A pilot study with five HEI teachers from different KSA universities assessed the clarity of the questions and the time required to complete the questionnaire. Some small adjustments were made because of the pilot such as improving the question wording and making the instructions clearer.

The questionnaire was developed in English and then I translated it into Arabic. The accuracy of the Arabic translation was verified following the same procedures used for previous questionnaires (Section 4.2.3).

8.2.4 Procedure

The study was advertised on a range of channels in KSA, including internal university email lists, social media platforms, and by emailing colleagues in different HEIs, ask them to share the invitation. The study was conducted in September 2023.

8.2.5 Data Analysis

The data analysis was undertaken in the same way as for the first KSA teachers survey (Section 6.2.6). Participants in this study were given codes such as VC2-T1, indicating Teacher 1 in Videoconference Study 2.

8.3 Results

8.3.1 Use of videoconferencing technology, particularly the use of webcams in OTSs, and concerns about privacy and security in online teaching changed for KSA HEI teachers due to the pandemic (RQ1)

Participants rated their experience with online teaching, before and since the pandemic (Table 8.2). Before the pandemic the ratings of the online teaching experience were significantly above the midpoint of the scale, indicating prior experience with online teaching. Since the pandemic, the ratings were again significantly above the scale's midpoint, indicating substantial experience. Comparing the two periods, participants' online teaching experience showed a significant difference, indicating an increase since the pandemic.

Table 8.2 Participants' online teaching experience before and since the pandemic (form "None at all" scored as 1 to "A great deal" scored as 7)

Experience	Before the pandemic N, Median (SIQR) Wilcoxon One Sample	Since the pandemic N, Median (SIQR) Wilcoxon One Sample	Wilcoxon Related-Samples Test
Online teaching	52, 5.00 (1.50) p < 0.001	89, 7.00 (0.50) p < 0.001	52, -3.55 p < 0.001

Participants rated how often they turned their webcam on during different types of OTSs before and since the pandemic (Table 8.3). Before the pandemic, ratings for online lectures, small group discussions/seminars, one-to-one sessions with students, and lab sessions were significantly below the midpoint of the scale indicating that participants infrequently turned their webcams on in these situations. Since the pandemic, ratings for all types of online teaching remained significantly below the midpoint of the scale indicating infrequent webcam use during all session types. However, comparing the two periods, participants showed a significant increase in webcam use for online lectures and small group discussions/seminars, indicating that participants were more inclined to turn on their webcams. Conversely, lab sessions and one-to-one sessions with participants did not show significant changes in webcam use indicating that participants maintained similar use patterns for these types of sessions.

Table 8.3 Frequency of participants turning their webcam on during different types of OTSs before and since the pandemic (from “Never” scored as 1 to “Very frequently” scored as 7)

Type of OTSs	Before the pandemic N, Median (SIQR), Wilcoxon One Sample	Since the pandemic N, Median (SIQR), Wilcoxon One Sample	Wilcoxon Related- Samples Test N, Z/W
Live lectures	39, 1.00 (1.50), p < 0.001	76, 2.50 (2.50), p = 0.023	35, Z = -2.35, p = 0.019
Small group discussions/seminars	43, 1.00(1.50), p < 0.001	75, 3.00 (1.50), p = 0.041	34, Z = -3.70, p = 0.002
Lab sessions	30, 1.00 (1.00), p < 0.001	48, 1.00 (1.50), p < 0.001	22, W = 64.50, n.s.
One-to-one sessions with students	34, 1.00 (1.00), p < 0.001	70, 2.00 (2.00), p < 0.001	28, W = 61.50, n.s.

Participants rated their concerns about their privacy and security during online teaching before and since the pandemic (Table 8.4). Before the pandemic concerns were significantly below the midpoint of the scale, indicating low levels of concern. Since the pandemic, concerns have been not significantly different to the midpoint of the scale, indicating moderate levels of concern. When comparing concerns in the two periods, no statistically significant difference was observed. This suggests that, on average, participants' levels of concern remained moderate.

Table 8.4 Concerns about privacy and security during online teaching before and since the pandemic (from “Not at all” scored as 1 to “A great deal” scored as 7)

Concern	Before the Pandemic N, Median (SIQR)	Since the Pandemic N, Median (SIQR)	Wilcoxon Related- Samples Test
Level of concern about privacy and security	52, 3.00 (2.00) p= 0.010	89, 3.00 (2.00) n.s.	52, -1.082 n.s.

In a follow-up open-ended question, participants were asked to explain their ratings about privacy and security concerns during online teaching before the pandemic. The results of a thematic analysis of responses are summarized in Table 8.5. Only a small number of participants (6/86, 6.9%) reported privacy and security concerns. The most common concern was misuse, mentioned by two participants (33.3%). The remaining concerns (each raised by one participant, 16.6%) included unauthorized use of content, data leakage, ease of breaching privacy, and recording and publishing.

Table 8.5 Concerns about privacy and security during online teaching before the pandemic (N= 6)

THEME /Sub-theme	Examples
HAVE PRIVACY AND SECURITY CONCERNS (Mentioned by 6 participants, 6.9%)	
Misuse	Misuse (VC2-T7)
2 (33.3%)	Inability to say what might be used against me in any way – misuse (VC2-T8)
Unauthorized use of content	High concerns about using and publishing the content without the professor’s permission (VC2-T1)
1 (16.6%)	
Data leakage	The leakage of my data and the lack of sufficiently strong computer protection systems (VC2-T3)
1 (16.6%)	
Ease of breaching privacy	I know it’s easy to breach my privacy (VC2-T2)
1 (16.6%)	
Recording and publishing	Students record audio and video and publish it. (VC2-T6)
1 (16.6%)	

In another follow-up open-ended question, participants were asked to explain why they gave their rating about privacy and security concerns in online teaching since the pandemic. More participants responded, one-fifth of participants (18/86, 20.9%). This increase in responses suggests a rise in concerns in this area since the pandemic. The results of a thematic analysis of the responses are summarized in Table 8.6.

The majority of participants (13/18, 72.2%) had privacy and security concerns. Conversely, five participants (5/18, 27.7%) reported being less concerned about privacy and security during online teaching since the pandemic. Among the participants who had privacy and security concerns, five of the participants (5/13, 38.5%) expressed concerns related to image and voice recording without permission. Three participants (3/13, 23.0%) mentioned issues related to turning on their webcams, two participants (2/13, 15%) expressed concerns about location and personal space. Finally, uncertainty and lack of control, concerns about artificial intelligence, and electronic crimes were each mentioned by one participant (1/13, 7.7%).

Conversely, five participants (5/18, 27.7%) reported being less concerned about privacy and security during online teaching since the pandemic. These participants mentioned reduced concerns

about not turning on the webcam (2/5, 40.0%), minimal concerns due to the focused nature of lectures (2/5, 40.0%), and decreased concerns attributed to technical support and training (1/5, 20.0%).

Table 8.6 Concerns about privacy and security during online teaching since the pandemic (N = 18)

THEME /Sub-theme	Examples
HAVE PRIVACY AND SECURITY CONCERNS (Mentioned by 13 participants, 72.2%)	
Image and voice recording without permission 5 (38.5%)	Because sometimes students capture the screen without any previous notice (VC2-T10) Concerns of privacy or recording my image or voice and circulating it on the Internet (VC2-T2)
Turning on the webcam 3 (23%)	When I taught online, I didn't turn on my webcam. Students only heard my voice and saw PowerPoint slides or a whiteboard. So, as long as I didn't turn on my webcam, I felt safe. (VC2-T7) If the webcam is opened by mistake without my awareness. (VC2-T16)
Privacy concerns about location and personal space 2 (15%)	My privacy inside the house (VC2-T6) The reason is related to my surrounding environment (VC2-T14)
Uncertainty and lack of control 1 (7.7%)	I don't know who is actually listening to me as some students do not use headphones and everyone is basically attending my lecture (VC2-T11)
AI and privacy concerns 1 (7.7%)	With artificial intelligence, concerns have become greater... by using images or video clips criminally. (VC2-T18)
Electronic crimes 1 (7.7%)	Due to the high privacy of women in Saudi society and concerns related to electronic crimes. (VC2-T12)
LESS PRIVACY AND SECURITY CONCERNED (Mentioned by 5 participants, 27.7%)	
Not turning webcam 2 (40%)	Concern decreased because I only shared the lesson content without opening the webcam. (VC2-T1) Concerned less because I never use the webcam. (VC2-T15)
Nothing to talk about outside the context of the lecture 2 (40%)	Nothing personal (VC2-T4) Of course, there may be concerns about this matter, but there is nothing to worry about, given that the lectures are focused and there is nothing to talk about outside the context of the lecture (VC2-T22)

Technical support and training 1 (20%)	In general, much less due to the educational facility's interest in electronic and cloud platforms. (Specialized departments were supported by providing new services and technical support around the clock and adding features and training to official learning platforms) (VC2-T3)
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Participants were asked whether they take any precautions to preserve their online privacy and security during OTSs ("Not at all" scored as 1 to "A great deal" scored as 7). The median rating of 5.00 (SIQR 2.50) is not significantly different from the midpoint of the scale (One sample Wilcoxon Signed Rank Test, $Z = 1.48$, n.s.), indicating moderate levels of precautions to preserve online privacy and security during OTSs. In a follow-up open-ended question, participants were asked to explain the precautions they take to preserve online privacy and security during OTSs. Slightly less than a quarter of participants (19/86, 22.0%) provided answers (Table 8.7). The most mentioned precautions (14/19, 73.7% participants) related to reluctance to use webcams. Another less frequently mentioned precaution (4/19, 21.0% participants) related to personal data protection strategies. Finally, one participant (5.5%) mentioned the communication of privacy practices.

Table 8.7 Participants' precautions to preserve online privacy and security during OTSs (N=19)

THEME/examples
RELUCTANCE TO USE WEBCAMS (Mentioned by 14 participants, 73.7%)
I do not open the webcam (VC2-T2)
I didn't use it to turn the webcam on. That's all (VC2-T5)
Make sure the webcam is not turned on (VC2-T6)
PERSONAL DATA PROTECTION STRATEGIE (Mentioned by four participants, 21.0%)
By taking multiple backup copies on different storage devices, isolated and ready for use at any time. (VC2-T4)
One of the strategies I apply is using a different user on my computer to avoid exposing any private information to students when I share my screen. (VC2-T16)
COMMUNICATION OF PRIVACY PRACTICES (Mentioned by one participant, 5.5%)
I tried to remind the students about privacy and the importance of avoiding publishing or recording anything without permission (VC2-T15)

Participants were asked whether having their webcam on during OTSs makes them feel uncomfortable. A majority of participants (56/86, 65.1%) reported feeling uncomfortable, while 30

participants (34.8%) reported feeling comfortable. In a follow-up open-ended question, 31 participants (36.0%) gave their reasons, with four main reasons emerging (see Table 8.8). More than half the participants (16/31, 51.6%) mentioned privacy and security concerns, including concerns about recording and sharing of images and videos (8/16, 50.0%), general privacy and security with no explanation of what specific concern (4/16, 25.0%) and hacking (4/16, 25.0%). Nearly a third of participants (9/31, 29.0%) mentioned reasons that focused on cultural and religious factors, including religiously appropriate attire (6/9, 66.7%) and cultural norms (3/9, 33.3%). 3 participants (9.7%) mentioned reasons related to appearance and self-consciousness or embarrassment.

Table 8.8 Reasons for feeling uncomfortable about having their webcam on during online teaching (N = 31)

THEME /Sub-theme	Examples
PRIVACY AND SECURITY CONCERNS (Mentioned by 16 participants, 51.1%)	
Concerns about recording and sharing 8 (50.0%)	I am not comfortable if my session is recorded with me using a webcam. I don't know where those videos are saved (VC2-T24)
General privacy 4 (25.0%)	Screen capture by someone present and inappropriate use of the image (VC2-T34) Privacy on the Internet is weak (VC2-T7)
Hacking 4 (25.0%)	Privacy (VC2-T3) Privacy (VC2-T10) Concerns about hacking (VC2-T32) Breakthroughs (VC2-T36)
CULTURAL AND RELIGIOUS CONCERNS (Mentioned by 9 participants, 29.0%)	
Religiously appropriate attire 6 (66.7%)	Being Muslim, I am wearing hijab, so I do not want to be seen by students' male relatives (VC2-T1) I am a female and wear a hijab. It is not common in my culture to show ourselves in the media (VC2-T19)
Cultural norms 3 (33.3%).	Customs and norms do not allow opening the webcam. There is a lack of acceptance of the idea of opening the webcam among teachers and students as well. (VC2-T4) Based on our social culture, webcam operation, especially in the female community, is almost non-existent (VC2-T11)
APPEARANCE AND SELF-CONSCIOUSNESS (Mentioned by 3 participants, 9.7%)	

	I think I will become more self-conscious which might affect the quality of my teaching (VC2-T20)
Self-conscious	Appearance and look (VC2-T31)
3 (9.7%)	The webcam of the laptop might not be a high resolution which does not make my face beautiful (VC2-T28)
EMBARRASSMENT (Mentioned by 3 participants, 9.7%)	
	Usually, when I am at home, there are a lot of places to ask about something and it becomes embarrassing with the students on webcam (VC2-T5)
Embarrassment	Once I told one of my students to open his webcam and he was in his pants and undershirt. I regretted it and felt that I embarrassed him. (VC2-T35)
3 (9.7%)	Especially because usually it's the teacher that opens the webcam, while the students don't. However, some of my colleagues and their students opened the webcams, but I found the whole situation a little bit embarrassing. (VC2-T33)

8.3.2 KSA HEI teachers' current perceptions of the impact of webcam use on their own and their students' experiences in online teaching (RQ2)

Participants were asked whether using webcams in online teaching impacts them. Although optional, this question received a relatively high response rate, with more than half of the participants (59/103, 57.3%) providing answers, indicating considerable interest in the topic. The thematic analysis of responses is summarized in Table 8.9.

Participants were fairly evenly divided between those expressing negative impacts (31/59, 52.5%) and positive impacts (28/59, 47.5%). Of those who expressed negative impacts, the three commonly mentioned issues, each raised by 7 participants each (22.6%), were the invasion of personal privacy, religiously appropriate attire, and cultural norms. Two less frequent concerns, each raised by five participants (16.1%), were general discomfort and potential distractions. Also, four participants (12.9%) were concerned about unauthorized recording and sharing. Two participants (6.4%) noted feeling anxiety while using a webcam, and one participant (3.2%) raised concerns about the lack of trust and privacy.

Among the participants who expressed positive impacts, the most commonly mentioned positive impact (15/28, 53.5% participants) was enhanced interaction and communication. Less

frequently mentioned positive impacts were the facilitation of expression and understanding (9/28, 32.1% participants) and the improvement of emotional and atmospheric aspects (4/28, 14.3% participants).

Table 8.9 Participants' perceptions of the effects of using a webcam in online teaching (N=59)

THEME/Sub-theme	Examples
NEGATIVE IMPACTS (Mentioned by 31 participants, 52.5%)	
Invasion of personal privacy	I consider turning on the webcam a violation of my privacy (VC2-T31)
7 (22.6%)	Possibility of invasion of privacy (VC2-T81)
Religious attire and cultural norms	... is related to concerns related to the hijab, and my concerns are related to that (VC2-T86)
7 (22.6%)	I want to be comfortable and wear whatever I ever want. I am afraid some males might join or be next to my female students (VC2-T49)
General uncomfortable	Not comfortable (VC2-T22)
5 (16.1%)	uncomfortable (VC2-T21)
Potential distraction	Sometimes it causes distraction (VC2-T38)
5 (16.12%)	Distraction me (VC2-T6)
Unauthorized recording and sharing	It affects the privacy or transmission of lectures after they are recorded (VC2-T10)
4 (12.9%)	There is a chance to be recorded by the student without authorization (VC2-T30)
Anxiety	Anxiety (VC2-T82)
2 (6.4%)	
Lack of trust and privacy	It affects negatively because of the lack of privacy and trust (VC2-T62)
1 (3.2%)	
POSITIVE IMPACTS (Mentioned by 28 participants, 47.5%)	
Enhanced Interaction and communication	Increase the interaction (VC2-T15)
15 (53.5%)	It is better in terms of communication (VC2-T29)
Facilitation of expression and understanding	Through it, students notice the professor's body language and increase interaction between them (VC2-T48)
9 (32.1%)	The webcam can explain the meaning more clearly through the faculty member's movements and expressions (body language) (VC2-T11)

	It is better than talking to ghosts that I do not see or see their reactions (VC2-7)
Emotional and atmospherical positivity	Sometimes he feels good (VC2-T2)
4 (14.3%)	It affects mostly positively (VC2-T76)

Participants were asked about their level of agreement or disagreement with statements regarding the positive impacts of webcam use on them as teachers (Table 8.10). For all three statements, the median rating was significantly above the midpoint of the scale, indicating agreement with all the positive impacts.

Table 8.10 Participants' level of agreement or disagreement with statements regarding the impact of webcam use on them as teachers (from "Disagree" scored as 1 to "Agree" scored as 7) (N=103)

Statements	Median (SIQR)	Z	p
Students having their webcams on positively impacts my ability to gauge their understanding and participation.	6.00 (2.00)	3.31	< .001
It is easier to engage with students who have their webcams turned on.	6.00 (2.00)	4.11	< .001
Students' use of webcams enhances the overall online class dynamic.	6.00 (2.00)	3.86	< .001

An optional open-ended question asked about participants' perception of how having their webcam on or off influences their students' experiences. Less than half the participants responded (49/103, 47.5%). The thematic analysis of responses is summarized in Table 8.11.

A majority of the participants (43/49, 87.7%) believed that having the webcam on positively impacted students' online experiences. Only a small number of participants (6/49, 12.2%) believed webcam use negatively impacted students. Among those who believed that having the webcam on positively impacted students' learning experience, three key benefits were identified by participants: enhanced student communication (21/43, 48.8%), enhanced student engagement (16/43, 37.2%), and improved student understanding (6/43, 13.9%). Among those who believed that having the webcam on negatively impacted students, two main concerns emerged: privacy and cultural sensitivities (4/6, 66.6%) and distraction (2/6, 33.3%).

Table 8.11 Participants' perceptions on the impact of activating their webcam on their students' online teaching experiences (N=49)

THEME/Sub-theme	Examples
POSITIVE IMPACT (Mentioned by 43 participants, 87.7%)	
	Effective communication (VC2-T39)
Enhanced student communication 21 (48.8%)	I think it has a great impact, as its operation contributes to raising the quality of communication (VC2-T43) The students need to see the body language of the teacher during lectures and practical activities (VC2-T9)
Enhanced student engagement 16 (37.2%)	I believe that turning my webcam on during an online class will help in students' engagement in lectures and participation in activities (VC2-T17) It will affect their interactions and engagement with me (VC2-T56)
Improved student understanding 6/43 (13.9%)	They become more engaged when they can see the teacher (VC2-T55) It helps in understanding the material (VC2-T12) The student can understand more than my gestures and movements (VC2-T60)
NEGATIVE IMPACT (Mentioned by 6 participants, 12.2%)	
Privacy and cultural sensitivities 4 (35.6%)	I understand that the conservative nature of my society means that I will never be able to turn on my webcam during lectures (VC2-T27)
Distracting 2 (33.3%)	The matter is also still related to safety and privacy, especially in our society (VC2-T24) Sometimes the large number of images displayed is distracting (VC2-T10) It is not important. It may distract them (VC2-T51)

8.3.3 KSA HEI teachers' experiences regarding institutional policies and privacy and security breaches (RQ3)

Participants were asked whether their institution has a policy about whether teachers should have their webcams on during OTSs. A majority of participants (57/103, 55.3%) were unsure or did not know whether their institution had such a policy. A small number of participants (10/103, 9.7%) stated that

their institution did have such a policy, but over a third (36/103, 34.9%) stated that their institution did not. In a follow-up open-ended question, only one out of 103 participants (0.9%) provided further information: "We are requiring webcams to be kept off during online sessions" (VC2-T3).

Participants were asked about the level of agreement or disagreement with a statement about whether their institution provided adequate guidance and resources on privacy and security during OTSs for teachers ("Disagree" scored as 1 to "Agree" scored as 7). The median rating did not differ significantly from the midpoint (median: 4.00, SIQR: 1.50, $Z = -1.36$, n.s.), indicating moderate agreement on institutional provided adequate guidance and resources for privacy and security.

In a follow-up open-ended question, only a small number of participants (5/103, 4.8%) provided information about the institution's guidance on privacy and security during OTSs. Participants reported a lack of clear instructions or training on the matter: "I did not find any instructions or training regarding the existence of any instructions for teaching remotely" (VC2-T2). Other participants mentioned some support, such as technical assistance from specialized departments, but overall, the guidance on privacy and security was either minimal or unclear.

Participants were asked whether they personally think that teachers should have their webcams on during OTSs. Nearly half the participants (50/103, 48.5%) reported that they should, while a third (35, 33.1%) believed they should not and 17 (16.5%) were unsure or do not know.

Participants were asked whether they had ever experienced privacy and security breaches during OTSs. Seven participants (6.8%) reported experiencing privacy and security breaches more than once, 12 participants (11.6%) had experienced only one, and the majority (84, 79.6%) had not experienced any. In a follow-up open-ended question, six participants (5.8%) provided more information about breaches, but none explained how they handled these breaches. The most common reported breach was the unauthorized recording and sharing of content. For example, VC2-T3 described a breach, stating, "Publishing content without consent, using content out of context, manipulating audio clips, and taking the conversation out of context." Other breaches included disruptive incidents, such as inappropriate behaviour during seminars: "I was giving a seminar and one of the attendees started to shout and swear" (VC2-T2), and unauthorized sharing of screens on platforms such as Twitter: "The screen was filmed and commented on another platform Twitter" (VC2-T4). One participant also mentioned a more personal breach where someone forgot their webcam was on: "Someone once forgot his webcam was open and his family entered on it" (VC2-T5).

8.4 Discussion and Conclusions

This study examined how the use of online teaching and webcams, and concerns about privacy and security in online teaching has changed for KSA HEI teachers due to the pandemic. It explored teachers' perceptions of the impact of webcam use on both their own and their students' experiences in online teaching. Additionally, the study investigated teachers' experiences with institutional policies related to webcam use in OTSs and privacy and security breaches.

RQ1 examined how the use of KSA HEI teachers toward online teaching, webcams, and privacy and security concerns changed due to the pandemic. There was a significant increase in online teaching experience due to the pandemic, meaning that many teachers gained more familiarity with online teaching. There was also a significant increase in webcam use among teachers. Before the pandemic, they rarely used webcams in any type of OTS. Since the pandemic, there were significant increases in webcam use for live lectures and small group discussions. This increase is likely due to teachers realizing the benefits of webcam use, such as enhanced student engagement and improved communication. However, there was no significant change in webcam use for lab sessions and one-on-one sessions. This could be because these sessions were more difficult, and sometimes impossible, for teachers to organise online since the pandemic. When comparing the two periods, the pandemic encouraged teachers to use webcams more often in certain teaching situations, like lectures and discussions, but not in all types of OTSs.

Despite the increased use of webcams in lectures and discussions, a majority of participants felt discomfort with webcam use. Over half of the participants expressed privacy and security concerns, such as the fear of being recorded or their images being shared without consent. Cultural and religious reasons also contributed to this discomfort for some teachers, for example, the need to wear the hijab and cultural norms about personal visibility in webcams. These findings are consistent with those of Hosszu et al. (2021), who reported similar concerns among Romanian teachers about the potential difficulties faced by hijab-wearing females if they are asked to use webcams at home.

These findings show a tension between privacy and security concerns, cultural norms, and the increasing use of webcams in online teaching. The fact that privacy and security concerns remained stable despite increased webcam use suggests that teachers were already cautious about privacy and security before the pandemic. However, as webcam use became more common, they became more aware of specific risks, such as image and voice recording without permission. To address these concerns, HEIs should develop clear policies on webcam use, recording permissions, and privacy and security protection. Since I could not find any previous research that has specifically studied teachers'

privacy and security concerns in online teaching, this study provides new insights into an important issue. Future research should examine how long-term exposure to online teaching affects teachers' attitudes toward webcams and whether privacy and security concerns influence their willingness to use webcams.

RQ2 explored the current perceptions of KSA HEI teacher's use of webcams by both themselves and their students, sharing mixed opinions about the impact of webcam use on their teaching. More than half said it had negative effects, mainly due to privacy issues and cultural factors. On the other hand, almost half of the participants viewed webcam use positively, saying it helped improve interaction and communication. This supports Yarmand et al.'s (2021) findings that webcams increase engagement and close the gap between teachers and students in online teaching. However, in KSA, even with these advantages, there is an ongoing challenge to balance using webcams for better engagement while respecting cultural and privacy boundaries. When discussing how their webcam use affects students, most teachers agreed it helps improve communication and engagement. Still, the use of a webcam remains complicated: webcams can make classes more interactive but also cause negative impacts such as an invasion of personal privacy and cultural norms.

RQ3 explored KSA HEI teachers' experiences with institutional policies and privacy and security breaches during OTSs. Teachers took moderate precautions to preserve their privacy and security and many participants said they did not use webcams due to privacy and security concerns, suggesting they were acting to their own to reduce risks. These actions helped, but it also shows that teachers felt like they had to handle privacy problems by themselves without much help from their institutions. Many participants were unsure or did not know about their institution's webcam policies, which shows a gap in institutional policies. Institutions should not only make clear policies but also give good training to teachers about privacy and security. Teachers should not have to deal with these issues alone. Even though teachers said they were somewhat satisfied with current institutional help, their open-ended responses revealed that they did not feel fully supported. Very few teachers said they received proper training. Providing detailed training and resources can help teachers handle these issues better. Opinions about using webcams were mixed. Some teachers liked using webcams because it made students more engaged. However, many teachers did not like using them or were unsure about it. These mixed opinions mean that institutions need to create flexible policies that work for different situations.

Although most participants did not report privacy or security breaches during OTSs, a small portion did, with some experiencing multiple breaches. The most common issue was the unauthorized recording and sharing of their content. This shows the risk of misusing teaching materials and the need

to protect teachers' work and privacy. Other problems included bad behaviour during classes, such as one case in which a student shouted and used bad language. There was also a case in which a teacher accidentally left their webcam on, showing their private space. This highlights how privacy mistakes can happen and why teachers need better support to avoid such risks. Even though some teachers faced these problems, none of them explained how they solved them. This may mean that teachers lack the tools, resources, or support to handle privacy and security issues properly. The lack of answers to solving these problems points to a gap in support systems for teachers. This is consistent with the findings of Alammery et al. (2022), who reported that KSA HEI teachers had poor awareness of security and privacy settings in videoconferencing technologies. These findings show that KSA institutions need to make better policies and give training to deal with privacy and security problems in online teaching.

Several key limitations of this study include its reliance on participants' self-reports, as discussed in Study 1. Also, some participants may have felt pressured to present themselves as competent in their profession, which could have influenced their responses. Others may have been concerned that their answers would be reported to their institution, making them less open.

In conclusion, this study explored KSA HEI teachers' experiences with using webcams and their concerns about privacy and security before and since the pandemic. It also looked at how teachers think webcam use affects their online teaching experience. The results show that the pandemic significantly increased KSA teachers' use of webcams, in particular situations such as lectures and discussions. KSA teachers' concerns about privacy and security remained relatively stable, with no significant changes due to the pandemic. The main concerns reported since the pandemic included image and voice recording without permission and having webcams on. KSA HEI teachers expressed mixed feelings about the impact of webcams on online teaching. While many recognized benefits such as improved interaction and communication, concerns about privacy, security, and cultural or religious sensitivities persisted. Teachers were often unsure about the existence of institutional policies on webcam use and reported moderate satisfaction with institutional guidance on privacy and security. Institutions should develop clear policies on webcam use, recording permissions, and privacy and security protection.

Chapter 9: Study 7: Webcam Use, Privacy, and Security Concerns in Online Teaching: Experiences of UK HEI Teachers

9.1 Introduction

This chapter builds on the findings from Study 6, which explored KSA teachers' concerns about webcam use, privacy, and security in online teaching. It now focuses on UK HEI teachers, exploring how their experiences with webcam use and related concerns changed during the pandemic. It also examines UK teachers' perceptions of how webcam use affects their own teaching experiences and their students' experiences in online teaching. I could not find research examining UK HEI teachers' webcam use and associated privacy and security, thus this study addresses this gap in the research literature.

The study investigated the following research questions:

RQ1: How has the use of videoconferencing technology, particularly the use of webcams in OTSs, and concerns about privacy and security in online teaching changed for UK HEI teachers due to the pandemic?

RQ2: What are UK HEI teachers' current perceptions of the impact of webcam use on their own and their students' experiences of online teaching, and how students' webcam use affects their teaching experiences?

RQ3: What are UK HEI teachers' experiences regarding institutional policies on webcam use in online classes, and privacy and security breaches?

9.2 Method

9.2.1 Design

The study used an online questionnaire, building on Study 6, aiming to understand UK HEI teachers' perceptions of webcam use and privacy and security concerns.

The questionnaire was very similar to that used in the Study (Section 8.2.1), with some additional questions were added asking UK teachers' perceptions of how their students' webcam use affected them. It also asked about the effects of mixed webcam use scenarios where some students had their webcams on while others did not. The reason for not including questions about students' webcam use in the KSA teachers' questionnaire was based on initial findings in Study 5, which found that KSA teachers were generally reluctant to use webcams themselves. Understanding the factors behind this reluctance was a primary focus of that study, to first explore KSA teachers' own webcam use before investigating their perceptions of students' webcam use. In contrast, Study 3 found that UK teachers were more open to using webcams. As a result, the focus of this study shifted to understanding their perspectives on students' webcam use by investigating their perceptions of their students' webcam practices.

Ethical approval for the study was obtained from the Physical Sciences Ethics Committee of the University of York (Almekhled20230619).

9.2.2 Participants

A total of 59 teachers responded to the invitation to participate, but data from 22 were discarded due to not meeting the criteria of completing at least 75% of the questionnaire, leaving a sample of 37 participants. Demographic information for the participants is shown in Table 9.1.

Table 9.1 Demographic information for the participants

Age	
Range	27 – 66 years
Mean	47.5
Standard deviation	10.5
Gender	
Men	16 (43.2%)
Women	19 (51.4%)
Prefer not to say	2 (14.4%)
Highest level of education	
Masters	3 (8.1%)
PhD	34 (91.9%)
The subject area of teaching	
Arts/Humanities	7(18.9%)
CS and Engineering	16 (43.3%)
Medical Sciences and Health Science	1 (2.7%)
Physical sciences (e.g., physics, chemistry)	3 (8.10%)
Social sciences (e.g., psychology, sociology)	7 (18.9%)
Prefer not to say	3 (8.1%)

The age range of participants in this study was wide. Six participants (16.2%) were aged 56 and over, and 24 participants (64.9%) were aged 27 and over. When compared to the overall population of UK HE academic staff, the age distribution is quite similar. According to the Higher Education Statistics Agency (Higher Education Staff Statistics: UK, 2024), 3.0% of academic staff are aged 25 and under, and 19% are aged 56 and over. The gender distribution within the sample reflects a reasonably balanced representation of men and women.

All participants were teaching at HEIs in England. Many participants taught CS and engineering, with representation across arts, humanities, social sciences, physical sciences, and medical/health sciences. Areas of teaching covered five of the ten areas defined by HESA (2024). No participants came from the fields of agriculture, forestry, biological sciences, or mathematics. When asked about their teaching experience before the pandemic, nearly all participants (34, 94.6%) reported having such experience, although two participants (5.4%) did not.

9.2.3 Online Questionnaires

The questionnaire was very similar to the one used for the KSA teachers' survey (Section 8.2.3). Modifications were as follows:

Section 3. Teachers' current perceptions about the impact of webcam use on themselves and their students in OTSs: added questions about students' webcam use. An open-ended question asked for perceptions of how students having their webcams on or off affects the participant as a teacher.

Rating items about participants' level of agreement with statements about on the impact on OTSs in which only some students have their webcams on:

- Having some students' webcams on enhances all students' participation and interaction
- Students are more attentive when some of their webcams are on
- Students learn better when some of their webcams are on
- Having some webcams on helps build a stronger rapport between me and the students
- The use of webcams by some students promotes better teamwork and learning among all students
- The use of webcams by some students contributes to a positive and inclusive teaching session climate

- **Section 5. Demographics:** gender options were expanded to include 'male,' 'female,' 'Non-binary,' 'prefer not to say,' and 'prefer to self-identify.'

A pilot study was conducted similar to a previous study (see section 8.2.3). However, with two CS teachers at the University of York. The full questionnaire can be found in Appendix E2.

9.2.4 Procedure

Recruitment for the study used various channels, including internal university email lists and social media platforms. My supervisor emailed colleagues in a number of UK HEIs, asking them to publicize the survey. All participants were given an information sheet about the study's aims and how their responses would be processed and stored. The study was conducted in October 2023.

9.2.5 Data Analysis

Data analysis was undertaken in the same way as for the first UK teacher survey (see section 5.2.5). Each participant was labelled e.g. VC3-T1, for videoconferencing study 3, teacher 1.

9.3 Results

9.3.1 Use of videoconferencing technology, particularly the use of webcams in OTSs, and concerns about privacy and security in online teaching changed for UK HEI teachers due to the pandemic (RQ1)

Participants rated their experience with online teaching, both before and since the pandemic (Table 9.2). Before the pandemic, ratings were significantly below the midpoint of the scale, indicating limited experience with online teaching. However, since the pandemic, ratings have been significantly above the scale's midpoint, indicating substantial experience with online teaching. Comparing the two periods, participants' online teaching experience also showed a significant difference.

Table 9.2 Participants' online teaching experience before and since the pandemic (from "None at all" scored as 1 to "A great deal" scored as 7)

Experience	Before the pandemic N, Median (SIQR) Wilcoxon One Sample	Since the pandemic N, Median (SIQR) Wilcoxon One Sample	Wilcoxon Related-Samples Test
Online teaching	21, 3.00 (1.50) n.s.	35, 7.00 (0.50) p < 0.001	21, 188.50 p < 0.001

Participants rated how often they had their webcam on during different types of OTSs before and since the pandemic (Table 9.3). Before the pandemic, ratings for online lectures, small group discussions/seminars and one-to-one sessions were significantly above the midpoint of the scale indicating participants very frequently had their webcam on. On the other hand, ratings for lab sessions with students were significantly below the midpoint, indicating infrequent webcam use. Since the pandemic, ratings for all types of online teaching were significantly above the midpoint of the scale indicating very frequent webcam use during all sessions. Comparing the two periods revealed no statistically significant differences in webcam use for any type of online teaching.

Table 9.3 Frequency of teachers' turning their webcam on during different types of OTSs before and since the pandemic (from "Never" scored as 1 to "Very frequently" scored as 7)

Type of OTSs	Before the pandemic N, Median (SIQR), Wilcoxon One Sample	Since the pandemic Median (SIQR) Wilcoxon One Sample	Wilcoxon Related-Samples Test
Live lectures	12, 7.00 (2.50) n.s.	34, 7.00 (0.00) p < 0.001	12, 10.00 n.s.
Small group discussions/seminars	16, 6.50 (1.50) p = 0.04	37, 7.00 (0.00) p < 0.001	16, 31.00 n.s.
Lab sessions (e.g. chemistry, biology or computing)	4, 1.5 (2.50) n.s.	16, 7.00 (0.00) p < 0.001	4, 3.00 n.s.
One-to-one sessions with students	19, 7.00 (1.00) p = 0.009	37, 7.00 (0.00) p < 0.001	19, 13.50 n.s.

Participants rated their concerns about their privacy and security during OTSs before and since the pandemic (Table 9.4). Both before and since the pandemic, their concerns were significantly below the midpoint of the scale, indicating that participants generally had low levels of concern on these issues. However, there was a statistically significant increase between the two periods.

Table 9.4 Participants' concerns about privacy and security before and since the pandemic (from "Not at all" scored as 1 to "A great deal" scored as 7)

Concern	Before the pandemic N, Median (SIQR) Wilcoxon One Sample	Since the pandemic N, Median (SIQR) Wilcoxon One Sample	Wilcoxon Related-Samples Test
Level of concern about privacy and security	21, 1.00 (0.50) p < 0.001	37, 1.00 (1.00) p < 0.001	21, 55.00 p = 0.004

In a follow-up open-ended question, participants were invited to explain their ratings. Just over one-third of participants (13/35, 37.1%) provided an answer (Table 9.5). The majority of these participants (11/13, 84.6%) reported that they did not have privacy and security concerns with online teaching before the pandemic. However, two of the participants (15.4%) reported concerns. Among those participants who did not have privacy and security concerns, seven participants (63.6%) reported that they had rarely used online teaching before the pandemic. Two participants (18.2%) had limited concerns about privacy. Two participants (18.2%) mentioned that voice and slide recording only recordings are not of the teacher. On the other hand, two participants had privacy and security concerns related to students capturing and using either images or video.

Table 9.5 Participants' concerns about their own privacy and security during online teaching before the pandemic (N = 13)

THEME/Sub-theme	Examples
NO PRIVACY AND SECURITY CONCERNS (Mentioned by 11 participants, 84.6%)	
Limited experience in online teaching 7 (63.6%)	I only used online teaching very occasionally and didn't think about privacy issues (VC3-T1) I only occasionally carried out one-to-one supervision on Skype before the pandemic. I had no concerns about privacy as no issues arose, and this was an infrequent occurrence (VC3-T2)
Limited concerns on privacy 2 (18.2%)	I am aware of privacy concerns, but I wasn't concerned about them (VC3-T8) I didn't consider it an issue. I am not sure what privacy concerns I could even have! (VC3-T13)
Voice and slide recording only Recordings are not of the teacher 2 (18.2%)	I do not worry about privacy as the lectures etc are voice recorded and slides only (VC3-T4) I was only in one-to-one meetings or doing recorded lectures (audio with PPT visuals) (VC3-T6)
HAVE PRIVACY AND SECURITY CONCERNS (Mentioned by 2 participants, 15.4%)	

Lecture capture images being used inappropriately by students (VC3-T12)	
Students capture and use either images or video	I was aware of some students recording lectures. We didn't really have guidance on this, and we were not able to view the recording afterwards or have control over what was done with the recordings (VC3-T9)
2 (100.0%)	

When participants were asked if they would like to explain their rating about privacy and security concerns during online teaching since the pandemic, the majority (23/35, 65.7%) provided explanations. The results of a thematic analysis of responses are summarized in Table 9.6.

The most common concerns related to the privacy of the physical location and personal space. Five of these participants (5/23, 21.7%) expressed concerns about recording and sharing of sessions without permission. Two additional concerns, each raised by one participant (8.6%), involved uploading an incorrect recording and students keeping their webcams off: "I uploaded an incorrect recording, and there was some very sensitive material in it. A student alerted me, and I removed the recording, but it really made me uncomfortable about uploading recorded materials, and I always double and triple-check everything now" (VC3-T17). Another participant mentioned a concern related to students not having their webcams on: "Some concerns—especially about students located in China without their webcam on" (VC3-T10).

Table 9.6 Participant's privacy and security concerns during online teaching since the pandemic (N=16)

THEME/Examples	
PRIVACY OF PHYSICAL LOCATION AND PERSONAL SPACE (Mentioned by 16 participants, 69.5%)	
Students can see into my home. I am not comfortable with this (VC3-T5)	
I just tried to make sure the room I was using was tidy. It took me a long time to realize that I could blur the background or have a projected background (VC3-T1)	
RECORD AND SHARED WITHOUT PERMISSION (Mentioned by 5 participants, 21.7%)	
I am aware that students use screen capture software to record sessions without asking permission to do so (VC3-T3)	
I have had only slight worries about being recorded and shared online (VC3-T7)	

Participants were asked whether they take any precautions to preserve their online privacy and security during OTSs ("Not at all" scored as 1 to "A great deal" scored as 7). The median rating of 3.00 (SIQR = 2.00) is not significantly different from the midpoint of the scale (One sample Wilcoxon

Signed Rank Test, $Z = -2.278$, n.s.), indicating a moderate level of precautions to preserve online privacy and security during OTSs.

In a follow-up open-ended question, participants were asked to explain the precautions they take and the majority provided answers (27/37, 72.9%, see Table 9.7). The most frequently mentioned precaution was related to background management. Another precaution, mentioned by seven of these participants (10/27, 37.03%), focused on having a dedicated teaching space at home. Two participants (7.4%) reported using student verification processes, and another two (7.4%) reported privacy-conscious screen-sharing as a precaution.

Table 9.7 Participants' precautions taken to preserve online privacy and security during OTSs (N = 27)

THEME / Examples
BACKGROUND MANAGEMENT (Mentioned by 10 participants, 37.0%)
Eventually, I worked out how to blur my background, and I did that. Before that, I would sometimes have sessions in a different room where there was a wall of books behind me, as I thought that was more appropriate than my kitchen (VC3-T1)
I use a blurred background, or think carefully about what's visible behind me (VC3-T9) I conceal the background (VC3-T15)
DEDICATED HOME TEACHING SPACES (Mentioned by 10 participants, 37.03%)
I have a separate home office to teach/Zoom from (VC3-T14)
Dedicated office space at home (VC3-T27)
PRIVACY AND SECURITY PRACTICES IN ONLINE TEACHING (Mentioned by 3 participants, 11.1%)
Used Zoom security features to prevent/remove Zoom bombers, used Mural educational licenses to ensure only registered students could access the materials (VC3-T19)
Once or twice when I was in my pyjamas, I put a sweatshirt on so the watchers wouldn't guess. I also turn off webcams when I'm eating (VC3-T28)
By not making it mandatory for students to turn on their webcam (VC3-T2)
STUDENT VERIFICATION PROCESSES (Mentioned by 2 participants, 7.4%)
Links would be private, and I wouldn't record sessions until it was prerecorded lecture materials (VC3-T10)
Not really, aside from ensuring students come through a waiting room with their full names on the screen and are visible to me (so I know they are who they say they are). I don't really think of it in terms of privacy since teaching is a public activity, but obviously, I don't want intruders/disruptors or uninvited people listening in (VC3-T11)
PRIVACY-CONSCIOUS SCREEN-SHARING (Mentioned by 2 participants, 7.4%)

I use separate instances of the web browser for screen sharing so that my other tabs cannot be seen, and there is less risk of accidentally sharing emails, etc (VC3-T3)

I invest care about not having private content shown in screen shares and not recording any discussions (VC3-T13)

9.3.2 UK HEI teachers' perceptions of the impact of webcam use on their own teaching, their students' experiences, and how students' webcam use affects their teaching experiences (RQ2)

Participants were asked how using webcams in online teaching impacts them. More than one-third of participants (14/37, 37.8%) provided an answer. The thematic analysis of responses is summarized in Table 9.8. More than half of the participants who answered (8/14, 57.1%) expressed a positive impact, while less than half (6/14, 42.8%) reported a negative impact. Of those who expressed a positive impact, the most common benefit (5/8, 62.5% participants) was visual engagement and interaction. Three participants (3/8, 37.5%) mentioned how webcams help them better communicate with students and build relationships. Of those who expressed negative impact, the most frequently mentioned issue, raised by all participants (6/6, 100%) related to appearance and self-consciousness while using webcams in online teaching.

Table 9.8 Participants' perceptions of how using a webcam in online teaching affects them as teachers (N= 14)

THEME/Sub-theme	Examples
POSITIVE WEBCAM USE (Mentioned by 8 participants, 57.1%)	
Visual engagement and interaction	I observe and control my own reactions more (VC3-T11)
5 (62.5%)	Makes it a bit easier to gauge what the students are feeling (VC3-T1)
	It helps to establish a connection with the student (VC3-T18)
Communication and building relations	I am fine with webcams and teaching online - it takes more effort to create relationships and classroom action - but this can be achieved. The frustration is when students do not put cameras on - I understand why, but it does make it more challenging to create a classroom environment and build relationships (VC3-T3)
3 (37.5%)	
NEGATIVE IMPACT WEBCAM USE (Mentioned by 6 participants, 42.8%)	

Appearance and self-consciousness	I am a little self-conscious- but it makes me feel as though I am performing so I must give it my all (VC3-T17)
6 (100.0%)	If I am watching myself through the webcam, it may affect me because I am becoming self-conscious about the way I look, but usually, I would have slides and watch the students who had their webcam on, so that was fine (VC3-T22)

Participants were asked about their level of agreement or disagreement with three statements regarding the impact of webcam use on them as teachers (Table 9.9). For all three statements, median ratings were significantly above the midpoint of the scale, indeed they were all at the maximum score of 7.0).

Table 9.9 Participants' level of agreement or disagreement with statements regarding the impact of webcam use on them as teachers (from "Disagree" scored as 1 to "Agree" scored as 7) (N=37)

Statements	Median (SIQR)	Z	p
Students having their webcams on positively impacts my ability to gauge their understanding and participation	7.00 (1.00)	5.10	< .001
It is easier to engage with students who have their webcams turned on	7.00 (0.50)	5.24	< .001
Students' use of webcams enhances the overall online class dynamic	7.00 (1.00)	5.04	< .001

Participants were asked how having their webcam on or off influences their students' experiences. More than half of the participants responded to this optional open-ended question (20/37, 54.0%). The thematic analysis of the responses is summarized in Table 9.10. All participants who answered this question (20/20, 100.0%) believed that having their webcam on positively impacted students' online experiences, with no one mentioning negative effects. The most mentioned theme was

enhanced engagement (11/20, 55.0%), closely followed by developing relationships with students (9/20, 45.0%).

Table 9.10 Participants' views on the impact of having webcams on students' experiences in online teaching (N= 20)

THEME/Examples
ENHANCED ENGAGEMENT (Mentioned by 11 participants, 55.0%)
They are much more engaged, but as mentioned above you cannot make it mandatory, so only a small fraction do (the most motivated/best students?) (VC3-T3)
We know from past studies that students engage more with material if they can see the person who is speaking (VC3-T19)
DEVELOPING RELATIONSHIPS WITH STUDENTS (Mentioned by 9 participants, 45.0%)
I always have my webcam on. I think it is important to develop relationships as they are key to teaching and learning and without the webcam on this is even more difficult to do (VC3-T2)
It's an important factor in fostering trust relationships between myself and my students. They get to know me, and they feel I am approachable (VC3-T22)

Participants were asked about how students' use of webcams affects them as teachers. A majority of participants (28/37, 65.8%) commented on the impact of students having their webcams off, as this practice is common among students. This was an optional open-ended question, yet it received a relatively high response rate, indicating considerable interest in the topic. The thematic analysis is summarized in Table 9.11.

The most frequently mentioned impact, reported by more than half of the participants (18/28, 64.3%), was the difficulty teachers face in assessing students' engagement and interaction when their webcams are off. A less frequently mentioned impact, reported by six participants (21.4%), was the challenge of communicating effectively without visual cues. Additionally, four participants (14.3%) stated that they feel demoralized and frustrated due to the absence of visual feedback.

Table 9.11 Participants' perceptions on the impact of students having their webcams off teacher experiences in online teaching (N= 28)

THEME/Examples
DIFFICULTY OF ASSESSING STUDENTS' LEVEL OF ENGAGEMENT AND INTERACTION (Mentioned by 18 participants, 64.3%)

To be effective, teaching is a two-way activity. Without webcams, it is very difficult to know whether students are engaged or following the material or not (VC3-T4)

If they are not on, it makes teaching more difficult - if you can't see them, you can't gauge engagement, reactions etc. Are they even there? (VC3-T20)

If their webcam is off, I do not know if they are there at all if they are listening and/or understanding. If their webcam is off, it is like talking to a wall (VC3-T8)

DIFFICULTY IN COMMUNICATING WITHOUT VISUAL CUES (Mentioned by 6 participants, 21.4%)

It's also easier to talk to them if I can read their body language - easier to tell whether they understand what we're discussing, for example (VC3-T11)

It makes the building of classroom relationships more difficult and slower. It is frustrating - I can understand why for some - but it slows everything down - it is important that a group do have cameras on - to bounce - build and set an example (VC3-T5)

DEMORALIZATION AND FRUSTRATION DUE TO LACK OF VISUAL CUES (Mentioned by four participants, 14.3%)

It is deeply dispiriting not to be able to see the students; there is no feedback at all (VC3-T10)

It's demoralizing when one is staring at a sea of blank boxes with no idea of engagement (VC3-T19)

Hugely demoralizing (VC3-T19)

Much more boring/frustrating to teach to a blank screen (VC3-T3)

Participants were asked about their level of agreement with six statements about the impact of only some students have their webcams on in different teaching situations (Table 9.12). For all statements, the ratings were not statistically different from the midpoint of the scale, indicating that participants generally had neutral views regarding the impact of students' webcam use on these situations.

Table 9.12 Participants' level of agreement or disagreement with statements about the impact of a teaching situation in which only some students have their webcams on (from "Disagree" scored 1 to "Agree" scored 7)

Statements	Median (SIQR)	Z	p
Having some students' webcams on enhances all students' participation and interaction	4.50 (2.00)	0.19	n.s.
Students are more attentive when some of their webcams are on	4.00 (1.50)	1.29	n.s.
Students learn better when some of their webcams are on	3.00 (1.50)	-8.55	n.s.

Having some of the webcams on helps build a stronger rapport between me and the students.	5.00 (2.00)	1.92	n.s.
The use of webcams by some students promotes better teamwork and learning among all the students	4.00 (2.50)	0.82	n.s.
The use of webcams by some students contributes to a positive and inclusive teaching session climate.	5.00 (2.50)	0.52	n.s.

9.3.3 UK HEI teachers' experiences regarding institutional policies and instances of privacy and security breaches (RQ3)

Participants were asked whether their institution has a policy about teachers having their webcams on during OTSs. A majority of participants (23/37, 62.2%) were unsure or did not know, only a small number of participants (6/37, 16.2%) stated that their institution does have such a policy, and over a fifth (8/37, 21.6 %) stated that their it does not.

In a follow-up open-ended question, only four participants provided further information. Their responses noted that webcam use is generally encouraged but not mandated: "Staff are encouraged but not forced to have their webcams on" (VC3-T3).

Participants were asked about the level of agreement on their institution's guidance on privacy and security during OTSs for teachers ("Disagree" scored as 1 to "Agree" scored as 7). The median rating did not differ significantly from the midpoint (median: 4.00, SIQR: 1.50, $Z = -1.83$, n.s.), indicating neutral agreement on institutional guidance for privacy and security.

Participants were asked whether they personally think that teachers should have their webcams on during OTSs. A majority of participants (34/37, 91.9%) reported that they think that teachers should have their webcams on, while only 3 (8.1%) were unsure or do not have an opinion.

Participants were asked whether they ever experienced any privacy or security breaches of any kind during OTSs. Five of the participants (13.5%) had experienced more than one breach, four participants (10.8%) had experienced only one, and the majority (28, 75.6%) had not experienced any.

In a follow-up open-ended question, eight participants (8/9, 55.5%) described various breaches and their responses (Table 9.13). The most frequently mentioned breaches, reported by four participants (4/8, 50.0%), were the accidental exposure of personal information, settings, or

appearance. Three participants (3/8, 37.5%) reported intrusions and disruptions during OTs, and one participant (12.5%) reported unauthorized recording without consent.

Table 9.13 Participants' experiences of privacy or security breaches in online teaching (N=8)

THEME/Examples
ACCIDENTAL EXPOSURE OF PERSONAL INFORMATION/SETTING/APPEARANCE (Mentioned by four participants, 50.0%) Students' in PJs, with their toys or not-so-acceptable room decoration for a class (VC3-T3) People/animals wandering unexpectedly into the frame. I ignored it and proceeded as normal (VC3-T6) Students appeared online with small children in an unclothed state; they had few options around this during the pandemic due to having to have the children at home while they were studying. I said they should turn their webcam off during the taught session (VC3-T2) While sharing screen I showed my email tab by accident and have seen other students/colleagues do that (VC3-T4)
INTRUSIONS AND DISRUPTIONS (Mentioned by 3 participants, 37.5%) Someone entered the session and showed inappropriate photos (VC3_T5) It was a seminar for people with disabilities and someone entered the meeting to disrupt the proceedings. I was not leading the session, but the leader did immediately terminate the interloper (VC3-T7) I don't think it was in teaching, but an online seminar when we had a Zoom bomber, once when I was the host and once in an event that I attended. As host, I removed the Zoom bomber and locked down the room (VC3-T8)
RECORDED WITHOUT CONSENT (Mentioned by one participant, 12.5%) I was made aware that some of my previous teaching sessions (seminars that would not typically be recorded in a classroom setting) have been recorded without my consent, through word of mouth. I have not done anything about this as there does not feel any way to prove this, and I do not know which student(s) has(ve) done it (VC3-T1)

9.4 Discussion and Conclusions

This study examined how the use of online teaching, webcams, and concerns about privacy and security have changed for UK HEI teachers due to the pandemic. It explored teachers' perceptions of how webcams affect both their own teaching experiences and those of their students. Additionally, it investigated teachers' experiences with institutional policies on webcam use and instances of privacy and security breaches.

RQ1 focused on whether the pandemic changed UK HEI teachers' use of online teaching, webcams and their privacy and security concerns. There was a significant increase in online teaching due to the pandemic. Before the pandemic, UK teachers commonly used webcams during lectures, small group discussions, and one-on-one sessions, but less so in lab sessions, possibly because these sessions emphasized hands-on demonstrations that require face-to-face interaction. Since the pandemic, webcam use increased across all teaching scenarios, including lab sessions. This shift likely reflects the need to engage students and adapt to new situation which requires more online teaching. Despite these changes, there were no statistically significant differences in overall webcam use between the two periods, suggesting that many teachers were already using webcams extensively before the pandemic. Their continued use during challenging circumstances indicates teachers' recognition of webcams as a means to support interaction and ensure teaching effectiveness.

In terms of privacy and security concerns, participants' overall concerns about these issues in online teaching were low both before and since the pandemic. However, the pandemic caused some changes, as the significant increase between the two periods shows an increased awareness of privacy and security risks. While many participants still had little concern, the wider range of responses in the open-ended question since the pandemic suggests a shift. This indicates that some UK HEI teachers have become more aware of potential risks. Before the pandemic, most participants said they had no major concerns about privacy and security. This was likely because online teaching was not used as much. However, since the pandemic, as these technologies became more common, many participants became more aware of possible privacy and security risks. The main concerns were privacy of the physical location and personal space. In response to these concerns, UK teachers in this study took moderate steps to protect their privacy. Most of them used tools like background blurring or virtual backgrounds in videoconferencing, and some set up dedicated teaching spaces. These actions show that UK HEI teachers made an effort to protect their personal space and keep boundaries between home and work. The focus on managing backgrounds highlights the importance of including guidance on these technologies in training programmes to improve privacy. UK HEIs should also create clear policies and provide support for teachers to set up dedicated teaching spaces. This would help teachers stay professional and maintain their privacy while working from home.

RQ2 explored the current perceptions of UK HEI teachers' about using webcams in online teaching, both for themselves and their students. Many participants reported positive effects, such as better engagement and interaction with students, as well as stronger relationships built through visual communication. These benefits helped teachers gauge students' understanding and create a more connected learning environment. These findings were consistent with Yarmand et al. (2021), who found that US HEI teachers also saw webcams as essential for fostering connections and improving

classroom dynamics. This suggests that when used effectively, webcams enhance interaction in different educational contexts. However, when asked about the impact of students' webcam use on their teaching, most reported the challenges of students keeping their webcams off. This made it difficult for many to assess student engagement, experienced slowed communication and felt frustrated and demoralized when webcams were off. This finding is similar to previous studies (Yarmand et al., 2021; Hosszu, 2021), which reported similar challenges among teachers in the US and Romania. When only some students had their webcams on, teachers expressed neutral views, as this did not fully resolve engagement challenges. However, it was still better than having all students' webcams off.

RQ3 explored teachers' experiences with institutional policies and privacy and security breaches. Most participants were not sure if their institutions had formal policies about whether teachers should have their webcams on during online classes. This lack of clarity suggests that these policies, if they exist, are not being communicated effectively, leaving many teachers uncertain about what is expected of them. Open-ended responses further supported this sense of inconsistency. Some participants mentioned that they were encouraged to use webcams, but none referenced a strict policy. Others expressed uncertainty or mentioned only being casually encouraged to use them during meetings. This flexible approach might work for some, but it also leads to uneven practices between departments or teachers.

There was a moderate level of agreement about how well institutions guide teachers on these issues, indicating that teachers felt that institutions provided some guidance, but not enough to make them feel fully supported. Without clear policies and guidelines, teachers have to deal with privacy and security concerns themselves, which can increase the chance of problems. This shows the need for better and more consistent guidelines to make sure both teachers and students get appropriate support in online teaching. About actual breaches, the majority of participants had not experienced any, but a small number had experienced one or more. Participants provided some interesting examples of breaches, ranging from minor mistakes such as accidentally sharing an email tab to more serious issues such as “Zoombombings” or students recording sessions without consent. These incidents show the kinds of challenges teachers face when trying to manage online sessions. Despite these concerns, the majority of teachers believed that they should have their webcams on during OTSs, recognizing the importance of visual interaction for maintaining student engagement.

The study had several limitations which need to be considered. The first limitation was the difficulty in recruiting UK HEI teachers, similar to the challenges faced in Study 3 (see Chapter 5), likely due to their high workload, particularly since the pandemic. Although I aimed to make the survey

focused and concise, it was still challenging to recruit a large number of UK participants. Future research needs to focus on enhancing recruitment strategies, such as collaborating with educational institutions or providing more flexible participation options. Also, exploring alternative methods, such as interviews or focus groups.

In addition, the results relied on the honesty and accuracy of the participants' self-report. Some participants may have felt pressured to appear competent or concerned their responses might be reported, which could have influenced their answers as discussed in previous Study 6.

In conclusion, this study explored UK HEI teachers' experiences with using webcams and their concerns about privacy and security before and since the pandemic. It also looked at how teachers think webcam use affects their teaching and their students' experiences. The findings show that UK HEI teachers see webcams as an important tool for improving engagement and building relationships with students. Even though webcams are helpful, there are difficulties in engaging with students when their webcams were off. The pandemic increased concerns about privacy and security, especially related to teachers' physical locations and personal spaces. The study also found that the lack of clear institutional policies on webcam use, privacy, and security created confusion and inconsistent practices. These results show that institutions should provide more support, including clear policies, training, and tools to help teachers protect their privacy and engage their students. By addressing these issues, webcams can be used more effectively to create better online teaching experiences for both teachers and students.

Chapter 10: Overall Discussion and Conclusions

This research programme investigated the privacy and security experiences and concerns of HEI students and teachers in the UK and KSA in relation to online teaching. The research was divided into three phases (see Figure 1.1 and 10.1). It began with four online surveys (Studies 1 – 4, Phase 1) to gain a general overview of the experiences and concerns related to privacy and security in online teaching for UK and KSA HEI students and teachers, what the situation was like before the pandemic and how this changed as a result of the upheaval of the pandemic. Building on the findings from Phase 1), the research then conducted a field study in at a university in KSA to investigate a number of the issues raised in further depth and with more immediate data collection (Study 5, Phase 2). Data was collected from students and teachers immediately after online classes, as well as at the beginning and end of the study to investigate their experience of webcam use in online teaching and their privacy and security concerns in this area. Finally, two studies investigated the experience of HEI teachers both the UK and KSA in more detail (Studies 6 and 7, Phase 3). These online surveys investigated how the use of online teaching, webcams, and privacy and security concerns have evolved among KSA and UK HEI teachers due to the pandemic. These studies also examined teachers' perceptions of how webcam use impacted both their own teaching experiences and their students' in online teaching.

Before turning to the discussion of each phase, it is important to note one general issue. Originally I had planned to make detailed comparisons between the data collected in the UK and KSA. However, once the data began to be collected, I realised this was not a sensible plan. In the all the studies, there were major differences between the UK and KSA samples for both students and teachers. For both groups, differences included academic backgrounds, highest levels of education, and mode of teaching before the pandemic. For teachers, additional differences were found in their teaching experience and the subjects they taught. There are also major differences in the cultural and educational systems of the two countries (Sections 2.5 and 2.7). As a result, I decided that only a general comparison of key findings between the cultures was reasonable to undertake, as there are so many potentially confounding variables. However, the results do contribute to understanding the important role of cultural and educational systems in shaping online teaching experiences.

These key findings for each phase of the research are summarised in Figure 10.1, which also shows how they informed the next stages of the research programme. These will be discussed in relation to the overall discussion of each phase of the research.

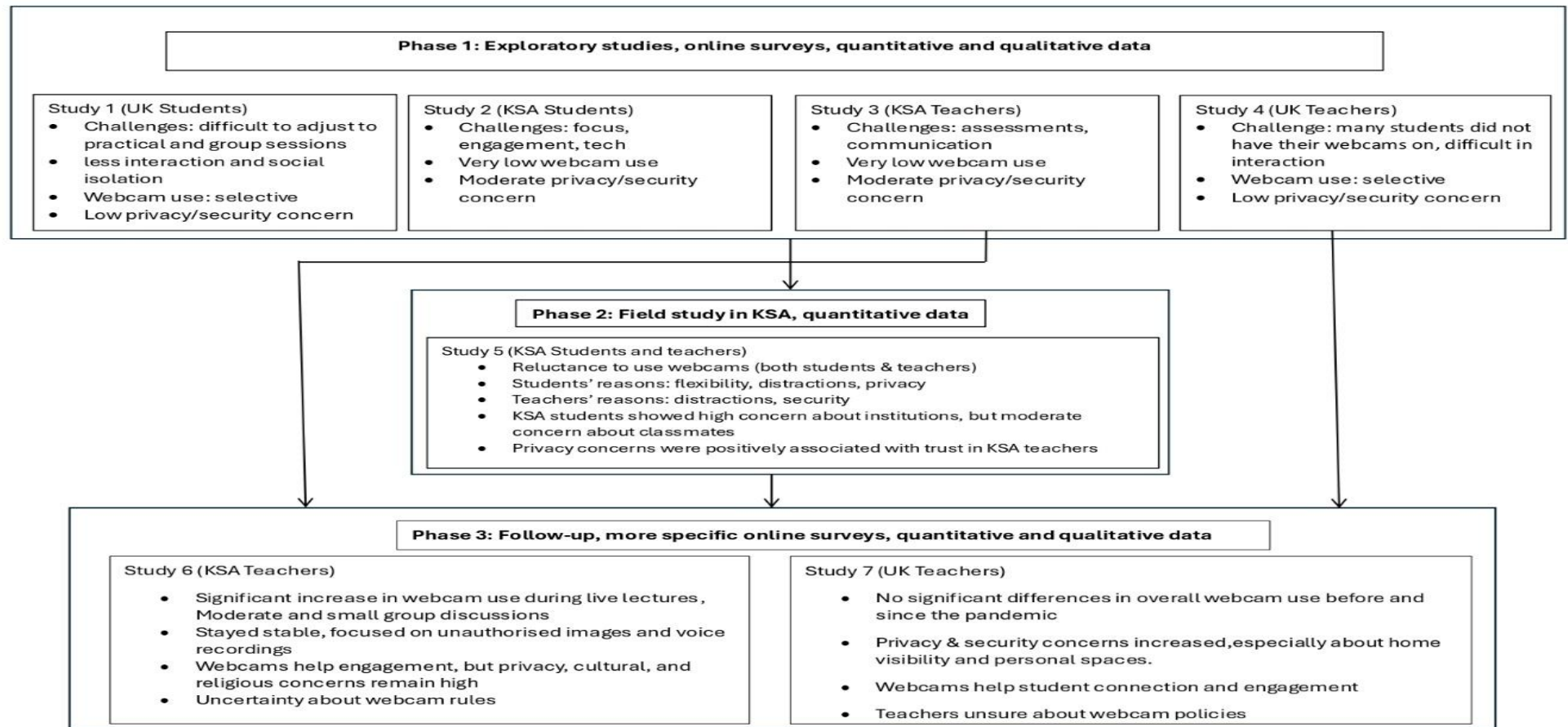


Figure 10.1 Summary of key findings across the research phase

The four studies in Phase 1 produced a number of key findings including privacy and security concerns in all the studies, different levels of webcam use and challenges related to the changes due to the pandemic. In particular, the studies found differences in teachers' and students' experiences and concerns. In response to the pandemic, UK HEI students rapidly shifted from face-to-face to fully online teaching, which made it difficult to adjust to practical and group sessions; many reported experiencing less interaction and social isolation. In contrast, KSA students, who had more prior experience with blended teaching, transitioned less dramatically from blended teaching to fully online but faced challenges with focus, engagement, and technical difficulties rather than group work and social isolation. Another key difference was webcam use, UK students used webcams selectively depending on the type of OTSs, whereas KSA students reported a very low level of webcam use across all types of OTSs. Privacy and security concerns varied as well. UK students reported very low privacy and security concerns in using videoconferencing technologies. In contrast, KSA students expressed moderate concerns.

Teachers in both countries had different experiences and concerns. Similar to UK students, UK teachers rapidly shifted from face-to-face to fully online teaching, whereas KSA teachers, who had more prior experience with blended teaching, transitioned was less dramatic being often from blended teaching to fully online, much like KSA students. Both teacher groups found student engagement to be a major challenge, but their other challenge was different. UK teachers reported that many students did not turn on their webcams, which made interaction difficult. In contrast, KSA teachers were more concerned about communication issues and challenges with online assessments. Again, as with students, another key difference was in webcam use. UK teachers used webcams selectively, depending on the type of OTS, whereas KSA teachers reported a very low level of webcam use across all types of OTSs. UK teachers saw webcams as helpful for running sessions, whereas KSA teachers focused on balancing their use with privacy and culture. Privacy and security concerns varied as well. UK teachers reported very low levels of privacy and security concerns in using videoconferencing technologies, whereas KSA teachers expressed moderate levels of concern.

The results from the four studies reflect differences in the cultural and educational systems between the UK and KSA, as discussed in the literature review (Sections 2.5 and 2.7). For example, some of the differences found reflect differences in Hofstede's proposed dimensions of Power Distance and Individualism. In the low Power Distance culture of the UK, students struggled more with practical and group teaching sessions as UK students are used to dynamic in-person engagement that supports independence and critical thinking. The shift to less interactive online teaching was a challenge for them. UK teachers faced difficulties with student engagement, as their teaching

approaches relies on interaction and participation, which became harder when students had their webcams off.

In the highPower Distance culture of the KSA, students faced challenges with focus, engagement, and technical issues, likely influenced by the traditional teacher-centred philosophy. In this system, students are expected to follow instructions rather than actively participate, making engagement more difficult, especially when technical issues disrupt lessons. Similarly, KSA teachers faced communication and assessment challenges. Their approach, which relies on the teacher as the main source of information and uses formal communication, offered fewer chances for student participation. This made both communication and effective assessment more difficult.

In addition to Power Distance, the results reflect the Individualism dimension. KSA's culture which emphasizes strong family ties and community support helped students avoid the social isolation reported by UK students. This cultural context likely made it easier for KSA students to adapt emotionally to the transition despite challenges like maintaining focus and internet connectivity. In contrast, UK students, who are used to an individualistic culture that values independence, may have felt more isolated when interactive, face-to-face teaching was replaced with less engaging online classes.

Webcam use also differed between the two countries, likely due to cultural and educational system differences. In the UK, students and teachers appeared to use webcams to help participation and engagement. This is undoubtedly part of the student-centred philosophy which encourages critical thinking and independence, resulting in greater student involvement. This environment makes UK students more comfortable using webcams as they are accustomed to expressing themselves and participating in discussions. In contrast, KSA teachers and students were very limited in webcam use. This could be related to KSA's teacher-centred philosophy, which focuses on delivering content rather than interaction. The findings on cultural differences in online teaching experiences agree with previous research by Gómez-Rey et al. (2016), which examined how Hofstede's cultural dimensions influence students' experiences in online teaching. They found that the dimensions of Individualism-Collectivism, Power Distance, and Uncertainty Avoidance played an important role in shaping students' experiences. For example, students from countries with high levels of Uncertainty Avoidance (such as the USA) were comfortable with an organised process of learning, whereas students from countries with lower levels of Uncertainty Avoidance such as Mexico and Spain were comfortable with an open-minded education system.

The differences in privacy and security concerns between UK and KSA students and teachers are also in line with previous research on cultural differences. In the UK, which has a high Individualism score in Hofstede's framework, privacy is seen as a personal matter and people tend to be less

concerned about privacy. My results agree with Trepte et al. (2017) who found people from Individualist cultures generally have less privacy concerns. Similarly, Fleming et al. (2021) found that in individualistic cultures like the UK and the United States, valuing personal data had little impact on privacy concerns. In contrast, in collectivist cultures such as India, people who value their personal data are more cautious about their privacy.

In conclusion, the first four studies in this research programme make an important contribution by understanding the experiences and concerns of HEI students and teachers in the UK and KSA about privacy and security in online teaching. These findings show that online teaching is not just about technology but also about adapting methods to cultural and educational contexts. To support this, educational institutions should provide guidance, and teachers should adjust their methods to reflect these differences. For example, interactive polls and breakout rooms can boost participation and engagement in low Power Distance cultures like the UK, where students are encouraged to engage actively and share ideas. In high Power Distance cultures like KSA, where teacher-led teaching is common, asynchronous discussions offer a comfortable way for students to share ideas without immediate pressure. For example, a teacher might post a question on a VLS giving students time to reflect and respond at their own pace. Institutions should set clear guidelines on webcam use and data protection. This research offers useful guidance for developing online teaching policies that support both student and teacher engagement while protecting privacy and security in different cultural settings.

Phase 2, which was a field study to investigate the levels of webcam use and the reasons why students and teachers in a KSA HEI (SEU) had their webcams on or off during target online classes (Study 5). The key findings from this study were reasons why students and teachers in KSA are reluctant to have their webcams on during online teaching sessions and the complex relationships between concerns about security and privacy as well as trust in different actors involved in online teaching (Figure 10.1). These key findings also illustrate how this phase built upon and elaborated the findings of the studies in Phase 1. This study examined the relationship between privacy, security, and trust in various actors involved in online teaching for students in KSA. Unlike the two previous studies in the KSA (Studies 2 and 4), which examined the attitudes of students and teachers toward webcam use in online teaching using an online survey, this study gathered information immediately on behaviours in online classes, to have the most accurate and detailed information possible without intruding on the class itself. The findings revealed that both students and teachers were reluctant to use webcams, but their reasons differed: students cited flexibility, distractions, and privacy as key reasons, while teachers were more focused on distractions and security reasons. Interestingly,

students showed high levels of concern about their institutions but only moderate concern about teachers and classmates. Privacy concerns were positively associated with trust in teachers.

The results confirm the ongoing reluctance of both KSA students and teachers to use webcams, found in the Phase 1 studies. Previous research has found that students often do not use webcams due to shyness, anxiety, social norms, and privacy concerns (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Dixon & Syred, 2022; Gherheş et al., 2021; Rajab & Soheib, 2021). This study adds new reasons in terms of flexibility and distractions, which may be specific to KSA students. For teachers, previous research has not investigated their reasons for not using webcams. This study found that teachers were mainly concerned about distraction and security, which contributes to the body of knowledge about webcam use and attitudes, as I could not identify any previous research specifically addressing teachers' reasons for avoiding webcams in online teaching.

Thinking of simple solutions to these problems, SEU students and teachers could benefit from more flexible and private ways of using webcams in online teaching. The institution and the VLEs they use play a key role in designing and implementing any solutions. For students, flexibility is a major concern as some feel webcams limit their ability to attend from different locations or multitask. Allowing selective webcam use based on class activities can help balance engagement and comfort. Students in public spaces should have the option to participate using audio-only and short breaks in long sessions can give them the freedom to turn off webcams without losing focus. Privacy is another concern with students concerned about their surroundings being visible or unauthorized recordings. This is easily addressed by providing standard virtual backgrounds and blur options and making students aware of them. In addition, enforcing strict policies about recording without consent and educating students on privacy rules are important. Teachers should inform students that capturing or sharing recordings without permission is not allowed and try to ensure no violations occur (which may be difficult). Distraction is another concern, as students may focus on how they look instead of the course content or become distracted by seeing others on screen. Unlike in physical classrooms, webcams create a closer more intense view of faces which some students may find distracting or uncomfortable. To reduce this, VLEs should allow students to hide their own video feed from themselves while keeping their webcam on. This helps them focus on the class rather than their focus on how they look. VLEs should also allow students to adjust the video layout so they can see fewer video feeds or focus only on the speaker. These features can make online teaching more comfortable and less distracting.

Teachers also face challenges, mainly related to security and distractions. Security concerns include uncertainty about who can access recorded sessions and where they are stored. Institutions should establish clear policies on recording storage and access. Also, VLEs should use encrypted

storage with multi-factor authentication to prevent hacking. Teachers should have control over recordings, such as approving content before storage. In terms of distractions, teachers may feel self-conscious about their appearance which can shift their focus away from their teaching. Some were also concerned that students seeing them via a webcam might distract students instead of improving engagement. Institutions should allow teachers to decide when and how to use webcams. Alternative tools such as screen-sharing digital whiteboards, and voice-based interaction can reduce the need for continuous webcam use while keeping students engaged. Training and support are also essential to helping teachers feel more confident. Institutions should provide workshops on webcam use and online presentation skills to improve teacher comfort while HEI technical support teams can assist with security settings and platform functionalities.

The findings also found that privacy concerns in KSA students are closely tied to trust in various forms of online teaching. Students reported high levels of concern about institutional levels of concern about how institutions collect, use, and protect their personal information. However, they reported moderate concern about teachers and classmates, which demonstrates the complexity of trust relationships. The results on trust support previous research showing the importance of interpersonal, institutional, and technological trust in shaping students' online experiences (Ejdys, 2018; Cavanagh et al., 2018). Interestingly, privacy concerns were positively associated with trust in teachers, suggesting that while students are wary of institutional practices, they still place important trust in teachers. This relationship aligns with the centralized authority of KSA's educational system, in which teachers hold a respected position in the hierarchy.

This study contributes to the understanding of KSA privacy and security concerns by providing insights into their immediate behaviours in online classes webcam use and issues of privacy, security, and trust. One important finding was that students and teachers had different reasons for not using webcams. Students did not use webcams because of flexibility, distractions, and privacy concerns, while teachers were mainly concerned about distractions and security risks. In addition, the findings suggest that institutions should focus on building trust by clearly communicating their data practices.

Phase 3 aimed to investigate how the use of online teaching and webcams, as well as concerns about privacy and security, have changed for UK and KSA HEI teachers due to the pandemic (Studies 6 and 7). Key findings from these studies included more detailed information about teachers attitudes to webcam use and how this changed due to the pandemic as well as teachers level of knowledge about institutional policies and their concerns about privacy and security issues in online teaching (Figure 10.1) These key findings show how this phase of research both built on the previous studies and elaborated on our knowledge about privacy and security issues and webcam use in online teaching. There were clear differences in how UK and KSA teachers used webcams and how they

perceived privacy and security risks. UK teachers showed no significant differences in overall webcam use before and since the pandemic, as they were already using webcams in live lectures, small group discussions, and one-to-one sessions. However, KSA teachers reported a significant increase in webcam use during live lectures and small group discussions. Privacy and security concerns were also different between the two countries. UK teachers' concerns significantly increased due to the pandemic, focusing on the exposure of their physical locations and personal spaces. In contrast, KSA teachers' concerns remained stable, with the main focus on unauthorised images and voice recordings.

Teachers in both countries saw benefits in using webcams for student engagement and communication, but their experiences were mixed. UK teachers believed webcams helped build student relationships, but they also felt self-conscious about webcams and struggled with students not having their webcams on. KSA teachers also saw benefits but were more concerned about privacy, security, religiously appropriate attire and cultural norms. An important finding was that both UK and KSA teachers were unsure about their institution's webcam policies and were only somewhat satisfied with privacy and security guidelines. This shows a lack of clear institutional policies and communication, meaning teachers did not always know what was expected when using webcams in online teaching.

The results from the two studies reflect differences in the cultural and educational systems of the UK and KSA (see Sections 2.5 and 2.7). UK teachers work within a student-centred philosophy that emphasizes interaction, discussion, and participation. Because of this, webcams are likely an important tool for supporting these teaching methods. As a result, UK teachers reported no significant change in their webcam use before and after the pandemic. In contrast, KSA teachers follow a teacher-centred approach with less focus on interaction and discussion. The significant increase in webcam use since the pandemic suggests that teachers may have started using webcams to enhance engagement and communication.

UK teachers reported that their privacy and security concerns increased. This was mainly due to the exposure of their physical locations and personal spaces during teaching from home. These concerns may have resulted from practical and professional needs, as teachers wanted to keep their work and personal lives separate. These concerns reflect Hofstede's Individualism dimension. In individualistic cultures like the UK, privacy is viewed as a personal right, so sharing home environments through webcams may have caused discomfort. In contrast, KSA teachers' privacy and security concerns remained relatively stable. However, their concerns were more focused on the possibility of unauthorized images and voice recordings being shared without consent. This reflects KSA's

collectivist culture, where privacy is closely linked to family reputation and social norms, as discussed earlier.

Turning to the importance of institutional policy in relation to privacy and security issues in online teaching, teachers in both the UK and KSA were uncertain about their institution's webcam policies and were only somewhat satisfied with privacy and security guidelines. Both UK and KSA institutions appear to lack clear policies on webcam use, whether OTSs should be recorded, and how privacy and security are managed in online teaching. Even when policies exist, many teachers were not fully aware of them. This uncertainty reflects Hofstede's Uncertainty Avoidance. In high uncertainty avoidance cultures like KSA, people prefer clear rules and structured guidance to feel safe and secure. Without clear policies, KSA teachers may have felt more cautious about using webcams. In contrast, the UK has moderate to low uncertainty avoidance, meaning teachers may have been more comfortable working without clear rules. Although they still reported concerns, UK teachers appeared more willing to continue using webcams despite this uncertainty. It is important to have clear and better-communicated policies on privacy and security that would help teachers understand their rights and responsibilities. This would make it easier for them to balance student engagement with privacy and security concerns.

The two studies contribute to our understanding of UK and KSA teachers' concerns about privacy and security in online teaching, particularly regarding webcam use. The findings highlight the need for HEI in both countries to adapt their online teaching strategies to better agree with cultural and educational systems context. To improve online teaching, institutions need clear policies on webcam use that address privacy and security concerns while promoting student engagement.

Overall, this thesis makes five main contributions to understanding privacy, security, trust, and webcam use in online teaching, focusing on the UK and KSA. These contributions can guide future research and help improve policies and practices in online teaching.

1. Cultural differences in privacy, security, and trust

The research shows clear cultural differences between participants from the UK and KSA in how they approach privacy and security in online teaching. UK students and teachers reported low levels of concern on these issues, while KSA participants expressed higher concerns. These differences appeared across all studies and I interpreted them using Hofstede's cultural dimensions, including Power Distance, Individualism, and Uncertainty Avoidance. This contribution enhances our understanding of how culture shapes experience and behaviours in online teaching.

2. Webcam use patterns and reasons across cultures

The research provides information about how webcam use in online teaching in HEIs differs between the UK and KSA. UK students and teachers used webcams selectively, depending on the session type,

while webcam use in KSA was consistently low among both students and teachers. The research also identified a new reason for having webcams off for students and teachers— flexibility, such as attending classes from different locations or multitasking. Additionally, some KSA teachers viewed webcams as a distraction.

3. Privacy and security concerns and trust

The research provides new insight into how concerns about online privacy in online teaching relate to trust, particularly among KSA students. While KSA students expressed high privacy concerns towards their institution, they showed greater trust in their teachers. A surprising finding was that privacy concerns were positively associated with trust in teachers. This suggests that trust in teachers may not be directly linked to how students perceive privacy concerns. Instead, privacy concerns may be directed towards institutions or the VLE, while interpersonal trust in teachers remains strong. This contribution extends current knowledge by showing that online privacy concerns and trust can coexist positively and highlights the complexity of these relationships in online teaching.

4. Methodological contributions

This research offers two key methodological contributions. First, in Study 5, data were collected immediately after live online classes, capturing attitudes toward webcam use, privacy, security and trust. This method improves the accuracy and level of detail of the information collected compared to the more typical surveys which ask participants about their attitudes and behaviour in general. Second, the research highlights cultural differences in the qualitative responses participants give to surveys. UK participants provided longer, more detailed answers, while KSA participants preferred shorter, structured responses. Thus it is more important for research in KSA to collect qualitative data using a range of methods including interviews and focus groups. This highlights the importance of culturally sensitive research methods in cross-cultural studies.

5. Institutional gaps and unclear policies

The research identifies gaps in privacy, security, and webcam policies in both the UK and KSA HEIs. Teachers in both countries reported unclear policies and limited support regarding privacy and online teaching. This contribution highlights the need for HEIs to improve policies, training, and communication to better support privacy-aware online teaching.

These five contributions strengthen our understanding of privacy, security, trust, and webcam use in online teaching and offer valuable guidance for universities and future research, especially in cross-cultural contexts.

To help show how the findings developed across the research, the most important and most surprising findings are shown in Table 10.1 and Table 10.2. They are grouped by each phase of the research.

Table 10.1 Most important findings of the programme of research

Phase	Important Findings
Phase 1: Exploratory Studies in UK and KSA (Studies 1–4)	Clear cultural differences in UK and KSA experiences and concerns in online teaching
	Webcam use in the UK varied by session type; in KSA it was consistently low
	UK students/teachers reported less concern about privacy/security than KSA counterparts
Phase 2: Field Study in KSA (Study 5)	KSA Students and teachers were reluctant to use webcams, but for different reasons
	KSA students reported flexibility as a reason to avoid webcams (not previously reported)
	KSA students showed high concern about institutions, but moderate concern about classmates.
	Data collected immediately after classes increased accuracy
Phase 3: Teacher-Focused Surveys in UK and KSA (Studies 6–7)	Webcam use increased for KSA teachers since the pandemic
	UK teachers' use stayed the same, but privacy concerns increased
	Both groups reported lack of clear institutional guidance

Table 10.2 Most surprising findings of the programme of research

Phase	Surprising Findings
Phase 1: Exploratory Studies in UK and KSA (Studies 1–4)	UK participants gave richer open-ended responses than KSA participants
	Surprisingly, most KSA teachers did not have their webcams on during online classes.
Phase 2: Field Study in KSA (Study 5)	KSA teachers reported distraction as a reason for not using webcams — an unexpected finding.
	Privacy concerns were positively associated with trust in teachers in KSA — unexpected link.
Phase 3: Teacher-Focused Surveys in UK and KSA (Studies 6–7)	Most KSA teachers still avoided webcams despite the shift to online teaching
	Teachers in both countries were uncertain about institutional policies, even years into the pandemic

10.1 Limitations and lessons learnt

The programme of research has a number of limitations which need to be highlighted, although some of these have been discussed in relation to each study. One key limitation was the difficulty of making direct comparisons between the UK and KSA samples. The two countries differed in educational backgrounds, teaching modes, educational systems, and levels of online teaching experience, making it challenging to compare the samples directly. Initially, I thought direct comparison would work, but I realized that comparing the two groups in each would reflect a whole range of differences.

From this, I learned that cross-cultural research is more than just comparing data, it is about understanding the context behind the responses. Rather than simply comparing the UK and KSA groups directly, I focused on the patterns and reasons behind their experiences. This helped me understand why each group responded the way they did, rather than just looking at the differences in their answers. Going forward, future research could use more controlled research designs or a mixed-methods approach to better separate cultural influences from educational practices.

Another limitation of this research is that most of the participants were self-selected, except for those in the field study. This means that those who chose to take part may have had stronger views on privacy, security, or online teaching compared to those who did not participate. As a result, the findings might not fully reflect the experiences of all students and teachers in the UK and KSA. For example, participants with high privacy concerns may have been more likely to respond to the surveys, which could have influenced the results. While this study provides useful insights, future research could use random sampling or institutional recruitment to ensure more representative samples.

From conducting the research, I learned that self-selection in research can influence the findings, as participants who choose to take part may have stronger opinions or specific experiences related to privacy and security. This made me more aware of the potential for bias, particularly in survey-based studies, and the importance of considering different recruitment methods. In future research, I would aim to use a combination of self-selection and institutional recruitment to ensure more balanced and representative samples. This experience also reinforced the value of mixed-method approaches to gain deeper insights beyond self-reported data.

Another limitation is the small amount of data available for thematic analysis from the open-ended questions. I noticed a clear difference in the way KSA and UK participants responded. KSA participants were less likely to answer open-ended questions, while UK participants gave more detailed answers. This shows that researchers need to adapt their methods to encourage more participation. For example, in KSA, where open-ended responses are less common, using structured

questions, multiple-choice options, or interviews may work better. Understanding these differences will help researchers design studies that gather more complete and useful data.

Also, the results relied on the honesty and accuracy of participants' self-reports. Accurately answering largely rating-based items might have been challenging for some participants. Self-reporting can sometimes lead to biases such as social desirability bias. There is a need for research using other methods, such as interviews and comparing with objective information such as logging data of webcam use (though this may raise serious ethical issues), to provide a more comprehensive understanding of the issues. These methods could help verify self-reported data and offer more nuanced insights into students' behaviours and attitudes.

Additionally, there was difficulty in recruiting UK teachers in Studies 3 and 7, probably due to their demanding workloads. In Study 3, 60 teachers initially responded, but 21 were excluded for not completing at least 75% of the questionnaire. The length and complexity of the survey likely contributed to these exclusions showing the need for more concise and focused study designs to reduce participant burden. In Study 7, I made efforts to create a more streamlined and manageable survey to address the issues observed in Study 3. However, similar challenges persisted, with 22 out of 59 responses excluded for incompleteness. These findings emphasize the ongoing difficulty of engaging UK HEI teachers in research and the importance of refining study designs to balance participant engagement with the collection of meaningful, high-quality data.

10.2 Future work and conclusions

This programme of research has shown that online teaching experiences are strongly influenced by cultural and educational contexts. It focused on one Western (UK) and one Arab (KSA) setting. Across the studies, important themes emerged regarding privacy, security, and the use of webcams.

Future research should explore these cultural influences further by examining online teaching experiences in other Western and Arab countries, as well as countries such as China, which shares some cultural similarities with KSA. As shown in Figure 10.1, China and KSA have similar levels of Individualism (China: 43, KSA: 48), suggesting that both cultures value group harmony over individual preferences. This raises important questions: Do Chinese students and teachers, like their KSA counterparts, follow cultural norms when deciding how to use webcams? Do they share similar, moderate levels of privacy and security concerns?

By studying these cultural influences, future research can help identify culturally specific best practices, teaching strategies, and technical solutions that address privacy and security concerns while improving the overall online teaching experience.



Figure 10.2 China and KSA on Hofstede's six dimensions (Source: <https://www.theculturefactor.com/country-comparison-tool?countries=china%2Csaudi+arabia>)

This research has also shown that privacy and security concerns can have lasting effects on how both students and teachers use webcams in online teaching. For instance, Study 5 found that students did not use webcams due to concerns about privacy, distractions, and a need for flexibility, whereas teachers cited security risks and distractions. Although these reasons explain current behaviours, they also have the potential to influence long-term engagement with online teaching especially if institutional policies around data protection and transparency remain unclear or unaddressed.

If privacy concerns and security persist, they can affect trust in online teaching, lead to avoidance of webcam use, and reduce opportunities for interaction, which may in turn affect learning outcomes and satisfaction. Conversely, transparent data protection policies and clear communication can alleviate concerns and encourage more open, collaborative OTSs. To better understand these, future studies could adopt longitudinal approaches to see how privacy and security concerns evolve over time and to assess whether institutional measures help students and teachers feel more comfortable using webcams in the long run.

Another important topic for further research relates to institutional policies. Privacy and security regulations vary by HEI and country, and these policies can shape how students and teachers perceive online teaching. Future research could compare how institutions communicate policies, handle data protection, and build trust. Studying multiple institutions, rather than only one per country, would help distinguish which issues are cultural and which are linked to specific institutional practices.

In conclusion, this research programme explored the experiences of online teaching and the related privacy and security concerns among HEI students and teachers in the UK and KSA, both before and since the pandemic. Using a combination of online surveys and a field study, the findings revealed clear differences in attitudes toward webcam use, privacy, and security concerns. The results show that cultural values and educational systems play important roles in shaping HEI students' and teachers' attitudes and behaviours. While UK participants showed more flexibility in webcam use, KSA participants reported limited webcam use due to a combination of cultural norms, privacy and security concerns. The results highlight the importance of developing technologies and policies that reflect the needs and realities of both HEI students and teachers. By addressing these issues, institutions can create safer and more effective online teaching environments. Future research should build on these findings by exploring strategies to improve student engagement in OTSs and investigate how privacy and security concerns influence student and teacher experiences in different cultural contexts.

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Appendix A: The validation processes of the privacy, security and trust scales.

A1: Privacy concern scales

The validation processes of the privacy concern scales used are summarised below. The table includes terms such as Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Common Method Bias (CMB), which are statistical techniques employed to validate measurement scales and ensure their reliability and validity.

Authors	Scale	Validation processes
Smith et al. (1996)	Concern for Information Privacy (CFIP)	Literature review, focus groups, EFA, CFA
Malhotra et al. (2004)	Internet Users' Information Privacy Concerns (IUIPC)	Literature review, qualitative research, field survey EFA, CFA
Buchanan et al. (2007)	Privacy-Related Attitudes and Behaviours Scale	Questionnaire, EFA, validity tests (convergent/discriminant), and comparisons across populations
Liu et al. (2018)	Privacy Concerns Scale for WeChat Users	Adapted scales, pilot testing, laboratory experiments
Kim (2021)	Privacy and Security Concerns in Online Sessions Scale	Expert feedback, pilot study, Cronbach's alpha, CFA, CMB assessment using PCA technique
Peng & Dutta (2022)	Online Teaching Privacy Concerns Scale	Expert feedback, pilot study, Cronbach's alpha, CFA, discriminant validity tests

A2: Security behaviour and attitudes scales

The validation processes of the security behaviour and attitudes scales used are summarised below.

Authors	Scale	Validation processes
Egelman & Peer (2015)	Security Behavior Intentions Scale (SeBIS)	Surveyed expert advice to develop items. Iterative surveys refined scale for broad relevance, EFA and CFA confirmed factor structure.
Bitton et al. (2018)	Information Security Awareness (ISA) Scale	Combined qualitative/quantitative methods. Longitudinal data collection via mobile apps.

		Reliability (Cronbach's alpha) and construct validity assessed.
Faklaris et al. (2019)	Self-Report Measure of End-User Security Attitudes (SA-6)	Developed scale based on theoretical and empirical research. EFA and CFA validated structure. Reliability (Cronbach's alpha = 0.84)
Kim (2021)	Security Concerns in Real-Time Online Sessions	Expert-reviewed items. Conducted a pilot study Applied CFA for construct validity and PCA/marker variable technique to test for Common Method Bias (CMB).

A3: Trust scales

The validation processes of the Trust Scales are summarised below.

Authors	Scale	Validation processes
Ejdys (2018)	Trust in institution and technology	Cronbach's alpha (0.69–0.90) for reliability. Descriptive statistics and correlation matrix for relationships among constructs. Convergent validity confirmed by factor loadings.
Gomez et al. (2022)	Trust in institution and brand association in an educational context	Expert panel review for content validity. EFA (65.35% variance) and Cronbach's alpha (0.977) for construct validity.
Heffernan et al. (2018)	Trust in institution	Cronbach's alpha, composite reliability, and AVE for validity. CFA for model fit.
Chen (2017)	Teacher Confidence in using, integrating, and applying technology	Cronbach's alpha for reliability (0.926 for trust, 0.946 for brand association). SEM for construct relationships and predictive validity.
Rovai (2001)	Classroom community	Pilot testing on graduate students. Cronbach's alpha (0.93 overall) for reliability.

Dong et al. (2021)	Trust within teacher-student relationships	Cronbach's alpha (0.78–0.90) for reliability
Cavanagh et al. (2018)	Trust in teachers	Cronbach's alpha (0.88) for reliability. Factor analysis supported construct validity.
Ennen et al. (2015)	Trust in classmates	EFA and CFA validated
Rice & Schroeder (2021)	Trust in Teacher, Classmate, and Self	Cronbach's alpha (0.97) for reliability. EFA identified factors

Appendix B: Consent Forms and Questionnaires for Studies 1 and 2

B1: Consent form and questionnaire for the UK participants

Thank you for your interest in taking part in this survey.

This survey is part of my PhD research at the University of York. I am interested in gathering information about your experiences with privacy and security issues of online teaching and at a higher education institution both before and since the coronavirus pandemic.

In order to participate you need to be:

- Over the age of 18
- Currently a full or part-time student at a higher education institution (studying at any level - undergraduate or postgraduate)

Your participation is completely voluntary, and you are free to withdraw at any time, without having to provide a reason and without any negative consequences.

The questionnaire will take about 20 - 30 minutes to complete. All the information you provide will be completely confidential and anonymised, so you will not be identifiable from any reports or publications. The original data will only be seen by me, Basmah Almekhled, and my supervisor Professor Helen Petrie. There are no known risks or benefits in participating in the questionnaire. None of the questions will ask anything that could reveal anything that would compromise your online privacy and security, they are all general questions. The questionnaire will not involve video and audio recording.

If you have any questions or concerns, you are free to contact my supervisor, Professor Helen Petrie, through the Prolific messaging system or at helen.petrie@york.ac.uk.

In accordance with data protection law, the University of York is the Data Controller for this research project. This means that the University is responsible for making sure your personal information is kept secure, confidential, and anonymous. The University will also ensure that the information is only used in the way you have been told it will be used. Information from this study will be stored on the University of York's cloud storage systems.

The University's cloud storage solution is provided by Google, which means that data can be located at any of Google's globally spread data centres. The University has data protection compliant arrangements in place with this provider (see <https://www.york.ac.uk/it->

services/google/policy/privacy/). The University processes personal data for research purposes under Article 6 (1) (e) of the General Data Protection Regulation (GDPR). The data will be kept until the final marks are formally approved for the module. If you have concerns about how your information is being processed, please contact the University's Data Protection Officer at dataprotection@york.ac.uk. If you are concerned about the way in which the University has handled your personal data, you have a right to lodge a complaint to the Information Commissioner's Office (Tel: + 44 303 123 1113, see www.ico.org.uk/concerns for more information).

If you are happy to participate in the survey, please read and confirm the statements below, otherwise select the Return to Prolific option.

1. I confirm that I am a full-time or part-time student at an institution of higher education in the UK.
2. I confirm that I have read and understood the information explaining this questionnaire and the implications of taking part in it.
3. I understand that my participation is voluntary and that I am free to withdraw at any time without any negative consequences. In addition, if I do not wish to answer any questions, I am free to do so. I understand that if I withdraw after taking part in some or all of the questionnaire, I may request that the information I provided be deleted but that I must do so within one week of the questionnaire.
4. I confirm I am aware of who to contact if I wish to request that my information be deleted.
5. I also understand that my personal information is confidential and that my data will be anonymised. Only Basmah Almekhled and her supervisor Helen Petrie will have access to the information in its original format. I understand that I will not be identified or identifiable in any materials related to the research.
6. I understand that there are no known risks to participating in this questionnaire
 - I understand the nature of the questionnaire and am happy to participate (
 - I do not wish to participate, please return me to Prolific to indicate this (please select the 'Stop without completing' button in Prolific).

What is your Prolific ID? This response should auto-fill with the correct ID.

Section 1: This first set of questions is about your higher education institution, so we can understand the context within which you study, particularly in relation to online teaching.

1. What is the full name of your institution (this will only be used to check the size and type of institution; it will not be published anywhere):
2. What is your major subject of study?
 - Architecture/design
 - Arts/Humanities (e.g. history, languages)
 - Administrative and Financial sciences
 - Computer science, Information science
 - Engineering
 - Medical sciences (medicine, dentistry, nursing)
 - Health sciences
 - Physical sciences (e.g. physics, chemistry)
 - Social sciences (e.g. psychology, sociology)
 - Other, please specify
3. What qualification are you currently studying for?
 - Undergraduate degree
 - Master's degree
 - PhD degree or equivalent
 - Other, please specify
4. Which academic year did you start your qualification

- September 2021 - August 2022
 - September 2020 - August 2021
 - September 2019 - August 2020
 - September 2018 - August 2019
 - September 2017 - August 2018
 - September 2016 - August 2017
 - September 2015 - August 2016
 - Other, please specify
5. Before the coronavirus pandemic, was the method of teaching at your institution:
- Face-to-face (i.e. all lectures, seminars, practicals etc were conducted in person, although resources such as course notes, reading, timetables might have been provided online)
 - Blended (i.e. teaching was a mix of face-to-face and online delivery)
 - Online only
6. In response to the pandemic, did teaching at your institution move online?
- Moved totally online
 - Moved partly online
 - Other, please explain
7. Please add any comments about how your experience of learning and studying has changed since the pandemic:

Section 2: This section is about your experience of teaching, both before and since the pandemic.

8. Some of the questions in the rest of the survey are about "online security and privacy" in relation to your experience of teaching. What does the term "online security and privacy" mean to you?
9. Definition sec/priv By "online security and privacy" in this survey I mean that a person's data, including their identity, is not accessible to anyone other than themselves and others who they have authorised and that their computing devices work properly and are free from unauthorized interference. You can use this definition and your own understanding in answering questions later
10. Before the pandemic, did you experience any of these modes of teaching (scored as 1 = Never to 7 = Very frequently)
- Lectures
 - Small group discussions/seminars
 - Lab sessions (e.g. chemistry, biology, or computer labs)
 - One-to-one sessions with your teachers
 - Fieldwork (i.e. sessions away from the institution)
11. Before the pandemic, how would you rate the typical level of your contribution (e.g. asking questions, contributing to discussions, interacting with the teacher or other students) in the

different modes of teaching (scored as 1 = very little participation to 7 = lots of participation)

- Lectures
 - Small group discussions/seminars
 - Lab sessions (e.g. chemistry, biology, or computer labs)
 - One-to-one sessions with your teachers
 - Fieldwork (i.e. sessions away from the institution)
12. Since the pandemic, have you experienced any of these modes of teaching (scored as 1 = Never to 7 = Very frequently)
- Lectures
 - Small group discussions/seminars
 - Lab sessions (e.g. chemistry, biology, or computer labs)
 - One-to-one sessions with your teachers
 - Fieldwork (i.e. sessions away from the institution)
13. Since the pandemic, how would you rate the typical level of your participation (e.g. asking questions, contributing to discussions, interacting with the teacher or other students) (scored as 1 = very little participation to 7 = lots of participation)
- Lectures
 - Small group discussions/seminars
 - Lab sessions (e.g. chemistry, biology, or computer labs)
 - One-to-one sessions with your teachers
 - Fieldwork (i.e. sessions away from the institution)
14. Since the pandemic, in live online teaching sessions, do you think the level of your participation (e.g. asking questions, contributing to discussions, interacting with the teacher or other students) is lower if you know the session is being recorded for later viewing? (scored as 1 = Not at all to 7 = very much)
15. Please provide any information about how you think your participation in teaching sessions has changed since the pandemic, and how it is affected by recording of teaching sessions.
16. Before the pandemic, did you submit any of your work online? (scored as 1 = Never to 7 = Very frequently)
- Formative assessments for feedback, but not as part of formal assessment (i.e. not for receiving marks)
 - Summative assessments (marked)
 - for online exams
17. Before the pandemic, were there any particular procedures to ensure the security and privacy of any work you submitted online?
18. Since the pandemic, have you submitted any work online (scored as 1 = Never to 7 = Very frequently)
- Formative assessments for feedback, but not as part of formal assessment (i.e. not for receiving marks)
 - Summative assessments (marked)
 - for online exams
19. Since the pandemic, have there been any particular procedures to ensure the security and privacy of any work you submitted online?
20. During the pandemic, what have been the main challenges for you in online teaching?

Section 3: This section is about the technology used for teaching before and during the pandemic

21. Before the pandemic, how often did you use any devices supplied by your institution for online teaching (scored as 1 = Never to 7 = Very often)
- Institution desktop
 - Institution laptop
 - Institution tablet
 - Institution smartphone
22. Before the pandemic, how often did you use any devices belonging to you personally for online teaching (scored as 1 = Never to 7 = Very often)
- Personal Desktop
 - Personal laptop
 - Personal tablet
 - Personal smartphone
23. Since the pandemic, have you been using any devices supplied by your institution personally for online teaching (scored as 1 = Never to 7 = Very often)
- Institution desktop
 - Institution laptop
 - Institution tablet
 - Institution smartphone
24. Since the pandemic, have you been using any devices belonging to you personally for learning and studying for online teaching (scored as 1 = Never to 7 = Very often)
- Personal Desktop
 - Personal laptop
 - Personal tablet
 - Personal smartphone
25. Before the pandemic, did you use videoconferencing technologies (e.g. Blackboard Collaborate, Google Meet/Hangout, Microsoft Teams, Skype, Webex, Zoom etc) in teaching?
Yes /No /Don't remember/not
26. Since the pandemic, have you used videoconferencing technologies (e.g. Blackboard Collaborate, Google Meet/Hangout, Microsoft Teams, Skype, Webex, Zoom etc) in teaching?
- Yes/No /Not sure
27. If you use videoconferencing technologies in teaching and studying, what are the main challenges of using them?
28. Before the pandemic, did you use any (e.g. Discord, Facebook Messenger, Slack, Telegram, WhatsApp), for either immediate or delayed communication, in your courses or use them for studying?
By immediate communication I mean communication that happens in “live” or “real time” — two or more people are exchanging information and responding to each other immediately. So, like a conversation, but it could be taking place in text over various different channels.
29. By delayed communication I mean communication that includes a lag between sending and receiving the messages, as in email. But now it can now take place over various channels.
- for immediate communication: Yes/ No/ Not sure
 - for delayed communication: Yes/ No/ Not sure
30. Since the pandemic, have you used any online chat technologies, for either immediate or delayed communication, for your courses or use them for studying?
Remember that by immediate communication I mean communication that happens in “live” or “real time” — two or more people are exchanging information and responding to each other immediately. So, like a conversation, but it could be taking place in text over various different channels.

By detailed communication I mean communication that includes a lag between sending and receiving the messages, as in email. But now it can now take place over various channels.

- for immediate communication: Yes/ No/ Not sure
 - for delayed communication: Yes/ No/ Not sure
31. Which online chat technologies have you used for delayed communication (you can name as many or as few as you wish, if you are not sure of names, just put "can't remember", if the same systems as before the pandemic, just put "same as before")?
32. If you use online chat technologies in teaching, what are the main challenges of using them?
33. How often do you turn on your webcam during these types of teaching sessions (scored as 1 = Never to 7 = Very frequently)
- Online lectures
 - Small group sessions/seminars
 - Lab sessions (e.g. chemistry, biology, or computer labs)
 - One-to-one sessions with your teachers
 - Online study sessions with other students
34. How do you decide whether or not to turn on your webcam during different teaching and study activities?
35. Do your teachers typically have their webcam on during online lectures and other activities:
- Online lectures
 - Small group sessions/seminars
 - Lab sessions (e.g. chemistry, biology, or computer labs)
 - One-to-one sessions with your teachers
 - Online study sessions with other students
36. How do you feel about whether teachers have their webcams on or not?

Section 4: This section is about your experiences of online security and privacy in your studies

37. Are you concerned about security and privacy issues in relation to the following activities (scored as 1 = Not at all concerned to 7 = Very concerned)
- Using videoconferencing technologies in teaching session
 - Using online chat technologies in teaching sessions
 - Using videoconferencing technologies in studying with other students
 - Using online chat technologies in studying with other students
38. Could you briefly describe any particular concerns you have in relation to using videoconferencing and online chat technologies in teaching and studying:
39. Do you have any concerns about the security and privacy of using the following devices for studying:) (scored as 1 = No concerns to 7 = Great concerns)
- Institution desktop
 - Institution laptop
 - Institution tablet
 - Institution smartphone
 - Personal Desktop
 - Personal laptop
 - Personal tablet
 - Personal smartphone
40. For any devices for which you have concerns, please briefly explain your concerns:
41. Does your institution have policies about security and privacy issues about the use of technology for online teaching and learning (e.g. for use of videoconferencing and online chat technologies)?
- Yes/ No/ I'm not sure/don't know
42. Does your institution offer training to support students in online security and privacy issues?
- Yes/ No/ I'm not sure/don't know

43. Have you taken any such training? Yes/ No
44. Please briefly describe any training you are aware of (whether you have taken it or not):
45. Studies show that over 50% of people don't read survey questions carefully. If you are reading this question, please select 'Three':
- One
 - Two
 - Three
 - Four
46. Are you currently concerned about any of these security and privacy issues in relation to online teaching (scored as 1 = Not at all concerned to 7 = Very concerned)
- Having to turn on your webcam during an online exam to allow the teacher to monitor you in real time
 - Having to video record yourself during online exams so a teacher can review the video later
 - Other students making recordings or screenshots without permission
 - Your work is being used as examples without your permission
 - Other students making inappropriate comments (sexist, racist)
 - Online lectures/seminars are being recorded without your knowledge
 - Unauthorised people attending teaching sessions
 - Unauthorised people interrupting teaching sessions
 - Other students harassing you
 - Your teacher not turning on their webcam in teaching sessions
 - Other students do not turn on their webcams in online sessions
47. Please add any comments on these issues, particularly any specific problems you have had in this area or other similar concerns:
48. Studies show that over 50% of people don't read questions carefully. If you are reading this paragraph, please select 'Two':
- One
 - Two
 - Three
 - Four

Finally, these are some questions about yourself. These will only be used for statistical purposes.

49. What is your gender?
- Male
 - Female
 - Non-binary
 - Prefer to self-identify, provide a label if you wish
 - Prefer not to say
50. How old are you? (to nearest year)

That's it! Thank you for taking the time to answer this long questionnaire.

B2: Consent form and questionnaire in the KSA participants

قضايا الخصوصية والأمان في التعلم عبر الإنترنت قبل وأثناء وباء كورونا.

شكرا لك على اهتمامك بالمشاركة في هذا الاستطلاع. هذا الاستطلاع هو جزء من بحثي لدرجة الدكتوراه في جامعة يورك. أنا مهتمة بجمع معلومات حول تجاربك في قضايا الخصوصية والأمان للتعلم عبر الإنترنت في مؤسسات التعليم العالي قبل وأثناء جائحة كورونا. من أجل المشاركة يجب أن تكون:

- ان يكون عمرك فوق 18 سنة
 - طالب حاليًا بدوام كامل أو جزئي في إحدى مؤسسات التعليم العالي.
- أعني بالتعليم العالي التعليم ما بعد الثانوي والجامعي الذي توفره الجامعات والمعاهد الفنية والجامعات المهنية (وكليات المجتمع وكليات الفنون الحرة ومعاهد التكنولوجيا والمؤسسات الجامعية الأخرى مشاركتك طوعية تمامًا ولك الحرية في الانسحاب في أي وقت دون الحاجة إلى إبداء سبب وبدون أي عواقب سلبية. في بداية الاستبيان، سيتم إعطاؤك رمزًا فريدًا، إذا كنت ترغب في الانسحاب خلال فترة تصل إلى أسبوع واحد بعد المشاركة، فما عليك سوى إرسال الرمز إلى البريد الإلكتروني وسيتم حذف جميع بياناتك. سيستغرق استكمال الاستبيان 20-30 دقيقة. ستكون جميع المعلومات التي تقدمها سرية تمامًا ومجهولة المصدر، لذلك لن يتم التعرف عليك من أي تقارير أو منشورات. سوف أطلع على البيانات الأصلية فقط أنا، بسمة ال مخلص، ومشر في البروفيسور هيلين بيتري. لا توجد مخاطر أو فوائد معروفة في المشاركة في الاستبيان. لن تطرح أي من الأسئلة أي شيء يمكن أن يكشف عن أي شيء من شأنه أن يحدد خصوصيتك وأمنك عبر الإنترنت، فهي كلها أسئلة عامة. لن يشمل الاستبيان تسجيل الفيديو والصوت. قد يدخل جميع المشاركين الذين أكملوا الاستبيان في السحب على الجوائز للفوز بواحدة من 10 قسائم هدايا من أمازون السعودية بقيمة 50 ريال سعودي. للدخول في السحب على الجوائز، ستحتاج إلى تقديم عنوان بريد إلكتروني حتى أتمكن من الاتصال بك، وسيتم حذف عنوان البريد الإلكتروني هذا بمجرد إجراء السحب على الجوائز ولن يتم استخدامه لأي غرض آخر. إذا كان لديك أي أسئلة أو استفسارات، فلا تتردد في الاتصال بي، بسمة ال مخلص (ba913@york.ac.uk) أو مشرفي، الأستاذة هيلين بيتري (helen.petrie@york.ac.uk).
- وفقًا لقانون حماية البيانات، فإن جامعة يورك هي المتحكم في البيانات لهذا المشروع البحثي. هذا يعني أن الجامعة مسؤولة عن التأكد من أن معلوماتك الشخصية تظل آمنة وسرية ومجهولة الهوية. ستضمن الجامعة أيضًا أن المعلومات يتم استخدامها فقط بالطريقة التي تم إخبارك بها. سيتم تخزين المعلومات من هذه الدراسة على أنظمة التخزين السحابية بجامعة يورك.
- يتم توفير حل التخزين السحابي للجامعة بواسطة Google، مما يعني أنه يمكن العثور على البيانات في أي من مراكز بيانات Google المنتشرة عالميًا. لدى الجامعة ترتيبات متوافقة مع حماية البيانات مع هذا المزود (انظر <https://www.york.ac.uk/it-services/google/policy/privacy>). تعالج الجامعة البيانات الشخصية لأغراض البحث بموجب المادة 6 (1) (هـ) من اللائحة العامة لحماية البيانات (GDPR). سيتم الاحتفاظ بالبيانات حتى يتم اعتماد العلامات النهائية رسميًا للوحدة. إذا كنت لديك مخاوف بشأن كيفية معالجة معلوماتك، فيرجى الاتصال بمسؤول حماية البيانات بالجامعة على dataprotection@york.ac.uk. إذا كنت قلقًا بشأن الطريقة التي تعاملت بها الجامعة مع بياناتك الشخصية، فيحق لك تقديم شكوى إلى مكتب مفوض المعلومات (هاتف: + 44303123 1113، راجع www.ico.org.uk/concerns للحصول على معلومات أكثر).
- إذا كنت سعيدًا بالمشاركة في الاستبيان، فيرجى قراءة العبارات الواردة أدناه وتأكيدتها. إذا كنت لا ترغب في المشاركة، ببساطة أغلق هذه النافذة ولن يتم تسجيل أي شيء.
- أؤكد أنني قد قرأت وفهمت المعلومات التي تشرح هذا الاستبيان وآثار المشاركة فيه.
 - أفهم أن مشاركتي طوعية وأني حر في الانسحاب في أي وقت دون أي عواقب سلبية. بالإضافة إلى ذلك، إذا كنت لا أرغب في الرد على أي أسئلة، فأنا حر في القيام بذلك. أفهم أنه إذا انسحبت بعد المشاركة في بعض أو كل الاستبيان، فقد أطلب حذف المعلومات التي قدمتها، ولكن يجب أن أفعل ذلك في غضون أسبوع واحد من الاستبيان.
 - أؤكد أنني على علم بمن يجب الاتصال به إذا كنت أرغب في طلب حذف معلوماتي.

- أفهم أيضًا أن معلوماتي الشخصية سرية وأن بياناتي ستكون مجهولة المصدر. فقط بسملة المخلد ومشرفتها هيلين بيتري هم من يمكنهم الوصول إلى المعلومات بصيغتها الأصلية. أفهم أنه لن يتم التعرف على هويتي أو التعرف على هويتي في أي مواد متعلقة بالبحث.
 - أفهم أنه لا توجد مخاطر معروفة للمشاركة في هذا الاستبيان
 - أوافق على الإجابة على هذا الاستبيان.
 - لقد فهمت طبيعة الدراسة، وأكدت العبارات أعلاه ويسعدني المشاركة.
- يرجى ملاحظة هذا الرمز الفريد، في حالة رغبتك في الاتصال بالباحثين أو الانسحاب من الدراسة:
- القسم الأول: لفهم السياق الذي تدرس فيه، خاصة فيما يتعلق بالتدريس عبر الإنترنت:**
1. ما هو الاسم الكامل لمؤسستك (سيستخدم فقط للتحقق من حجم ونوع المؤسسة، ولن يُنشر في أي مكان)
 2. ما هو تخصصك الرئيسي؟
 - العمارة/التصميم
 - الفنون/العلوم الإنسانية (مثل التاريخ، اللغات)
 - العلوم الإدارية والمالية
 - علوم الكمبيوتر، علوم المعلومات
 - الهندسة
 - العلوم الطبية (الطب، طب الأسنان، التمريض)
 - العلوم الصحية
 - العلوم الفيزيائية (مثل الفيزياء، الكيمياء)
 - العلوم الاجتماعية (مثل علم النفس، علم الاجتماع)
 - أخرى، يرجى التحديد
 3. ما هي المؤهل الذي تدرسه حالياً؟
 - درجة البكالوريوس
 - درجة الماجستير
 - درجة الدكتوراه أو ما يعادلها
 - أخرى، يرجى التحديد
 4. في أي عام دراسي بدأت مؤهلك؟
 - سبتمبر 2021 - أغسطس 2022
 - سبتمبر 2020 - أغسطس 2021
 - سبتمبر 2019 - أغسطس 2020
 - سبتمبر 2018 - أغسطس 2019
 - سبتمبر 2017 - أغسطس 2018
 - سبتمبر 2016 - أغسطس 2017
 - سبتمبر 2015 - أغسطس 2016
 - أخرى، يرجى التحديد
 5. قبل جائحة كورونا، هل كانت طريقة التدريس في مؤسستك:
 - وجهاً لوجه (أي جميع المحاضرات، الندوات، التطبيقات العملية كانت تُجرى حضورياً، رغم أن الموارد مثل ملاحظات الدورة، القراءات، الجداول الزمنية قد تكون متاحة عبر الإنترنت)
 - مختلطة (أي كانت التدريس مزيجاً من الحضور الشخصي والتسليم عبر الإنترنت)
 - عبر الإنترنت فقط
 6. استجابةً للجائحة، هل انتقلت مؤسستك للتدريس عبر الإنترنت؟
 - انتقلت بالكامل إلى الإنترنت
 - انتقلت جزئياً إلى الإنترنت
 - أخرى، يرجى التوضيح
 7. يرجى إضافة أي تعليقات حول كيف تغيرت تجربتك في التعلم والدراسة منذ الجائحة:

القسم الثاني: هذا القسم حول تجربتك في التدريس، قبل الجائحة وبعدها

8. بعض الأسئلة في بقية الاستبيان تتعلق بـ "الأمان والخصوصية عبر الإنترنت" فيما يتعلق بتجربتك في التدريس والدراسة. ماذا يعني لك مصطلح "الأمان والخصوصية عبر الإنترنت"؟
- تعريف الأمان/الخصوصية: في هذا الاستبيان نعني بـ "الأمان والخصوصية عبر الإنترنت" أن بيانات الشخص، بما في ذلك هويته، لا تكون متاحة لأي شخص آخر سوى نفسه والآخرين الذين أذن لهم، وأن أجهزتهم الحاسوبية تعمل بشكل صحيح وخالية من التدخل غير المصرح به. يمكنك استخدام هذا التعريف وفهمك الشخصي للإجابة على الأسئلة لاحقاً.
9. قبل الجائحة، هل كنت تجرب أي من هذه الأساليب التعليمية (قيم من 1 = أبداً إلى 7 = كثيراً جداً)
- المحاضرات
 - مناقشات المجموعات الصغيرة/الندوات
 - جلسات المعمل (مثل مختبرات الكيمياء، البيولوجيا، الحاسوب)
 - جلسات فردية مع معلميك
 - العمل الميداني (أي جلسات خارج المؤسسة)
10. قبل الجائحة، كيف كنت تقيم مستوى مشاركتك النموذجية (مثل طرح الأسئلة، المساهمة في المناقشات، التفاعل مع المعلم أو الطلاب الآخرين) في الأساليب التعليمية المختلفة (للأساليب التعليمية التي لم تجربها، يرجى) قيم من 1 = مشاركة قليلة جداً إلى 7 = مشاركة كبيرة جداً
- المحاضرات
 - مناقشات المجموعات الصغيرة/الندوات
 - جلسات المعمل (مثل مختبرات الكيمياء، البيولوجيا، الحاسوب)
 - جلسات فردية مع معلميك
 - العمل الميداني (أي جلسات خارج المؤسسة)
11. منذ الجائحة، هل جربت أي من هذه الأساليب التعليمية (قيم من 1 = أبداً إلى 7 = كثيراً جداً)
- المحاضرات
 - مناقشات المجموعات الصغيرة/الندوات
 - جلسات المعمل (مثل مختبرات الكيمياء، البيولوجيا، الحاسوب)
 - جلسات فردية مع معلميك
 - العمل الميداني (أي جلسات خارج المؤسسة)
12. منذ الجائحة، كيف تقيم مستوى مشاركتك النموذجية (مثل طرح الأسئلة، المساهمة في المناقشات، التفاعل مع المعلم أو الطلاب القيم من 1 = مشاركة قليلة جداً إلى 7 = مشاركة كبيرة جداً)
- المحاضرات
 - مناقشات المجموعات الصغيرة/الندوات
 - جلسات المعمل (مثل مختبرات الكيمياء، البيولوجيا، الحاسوب)
 - جلسات فردية مع معلميك
 - العمل الميداني (أي جلسات خارج المؤسسة)
13. منذ الجائحة، في جلسات التدريس عبر الإنترنت المباشرة، هل تعتقد أن مستوى مشاركتك (مثل طرح الأسئلة، المساهمة في المناقشات، التفاعل مع المعلم أو الطلاب الآخرين) يكون أقل إذا كنت تعرف أن الجلسة مسجلة للمشاهدة (لاحقاً؟)، قيم من 1 = ليس على الإطلاق إلى 7 = كثيراً جداً
14. يرجى تقديم أي معلومات حول كيف تعتقد أن مشاركتك في جلسات التدريس قد تغيرت منذ الجائحة، وكيف تأثرت بتسجيل جلسات التدريس.
15. قبل الجائحة، هل كنت تقدم أي من أعمالك عبر الإنترنت؟ (قيم من 1 = أبداً إلى 7 = كثيراً جداً)
- للحصول على ملاحظات، ولكن ليس كجزء من التقييم الرسمي (أي ليس للحصول على علامات)
 - للتقييم الرسمي
 - للامتحانات عبر الإنترنت
16. قبل الجائحة، هل كانت هناك أي إجراءات خاصة لضمان أمان وخصوصية أي عمل قدمته عبر الإنترنت؟
17. منذ الجائحة، هل قدمت أي عمل عبر الإنترنت (قيم من 1 = أبداً إلى 7 = كثيراً جداً)
- للحصول على ملاحظات، ولكن ليس كجزء من التقييم الرسمي (أي ليس للحصول على علامات)
 - للتقييم الرسمي

- للامتحانات عبر الإنترنت
- 18. منذ الجائحة، هل كانت هناك أي إجراءات خاصة لضمان أمان وخصوصية أي عمل قدمته عبر الإنترنت؟
- 19. خلال الجائحة، ما هي التحديات الرئيسية التي واجهتك في التدريس عبر الإنترنت؟
- القسم الثالث: هذا القسم حول التكنولوجيا المستخدمة في التدريس قبل الجائحة وخلالها
- 20. قبل الجائحة، كم مرة كنت تستخدم أي أجهزة توفرها مؤسستك للتدريس عبر الإنترنت (قيم من 1 = أبداً إلى 7 = كثيراً جداً)
- كمبيوتر مكتبي تابع للمؤسسة
- كمبيوتر محمول تابع للمؤسسة
- جهاز لوحي تابع للمؤسسة
- هاتف ذكي تابع للمؤسسة
- 21. قبل الجائحة، كم مرة كنت تستخدم أي أجهزة تابعة لك شخصياً للتدريس عبر الإنترنت (قيم من 1 = أبداً إلى 7 = كثيراً جداً)
- كمبيوتر مكتبي شخصي
- كمبيوتر محمول شخصي
- جهاز لوحي شخصي
- هاتف ذكي شخصي
- 22. منذ الجائحة، هل كنت تستخدم أي أجهزة توفرها مؤسستك شخصياً للتدريس عبر الإنترنت (قيم من 1 = أبداً إلى 7 = كثيراً جداً)
- كمبيوتر مكتبي تابع للمؤسسة
- كمبيوتر محمول تابع للمؤسسة
- جهاز لوحي تابع للمؤسسة
- هاتف ذكي تابع للمؤسسة
- 23. منذ الجائحة، هل كنت تستخدم أي أجهزة تابعة لك شخصياً للتدريس عبر الإنترنت (قيم من 1 = أبداً إلى 7 = كثيراً جداً)
- كمبيوتر مكتبي شخصي
- كمبيوتر محمول شخصي
- جهاز لوحي شخصي
- هاتف ذكي شخصي
- 24. قبل الجائحة، هل كنت تستخدم تقنيات المؤتمرات عبر الفيديو) مثل Blackboard Collaborate ، Zoom ، Webex ، Skype ، Microsoft Teams ، Google Meet/Hangout إلخ (في التدريس؟
- نعم
- لا
- لا أتذكر/لست متأكداً
- 25. منذ الجائحة، هل استخدمت تقنيات المؤتمرات عبر الفيديو) مثل Blackboard Collaborate ، Google ، Zoom ، Webex ، Skype ، Microsoft Teams ، Meet/Hangout إلخ (في التدريس؟
- نعم
- لا
- لست متأكداً
- 26. إذا كنت تستخدم تقنيات المؤتمرات عبر الفيديو في التدريس والدراسة، ما هي التحديات الرئيسية لاستخدامها؟
- 27. قبل الجائحة، هل كنت تستخدم أي) مثل Telegram ، Slack ، Facebook Messenger ، Discord ، WhatsApp للاتصالات الفورية أو المؤجلة، في دوراتك أو دراستك؟
- بالنسبة للاتصال الفوري، أعني الاتصال الذي يحدث في "الوقت الفعلي" — حيث يقوم شخصان أو أكثر بتبادل المعلومات والرد على بعضهما البعض فوراً. مثل المحادثة، ولكن يمكن أن يتم ذلك في النص عبر قنوات مختلفة.

بالنسبة للاتصال المؤجل، أعني الاتصال الذي يتضمن تأخراً بين إرسال واستلام الرسائل، كما في البريد الإلكتروني. ولكنه يمكن أن يتم الآن عبر قنوات مختلفة.

• للاتصال الفوري: نعم/لا/لست متأكداً

• للاتصال المؤجل: نعم/لا/لست متأكداً

28. منذ الجائحة، هل استخدمت أي تقنيات دردشة عبر الإنترنت، للاتصالات الفورية أو المؤجلة، في دوراتك أو دراستك؟

تذكر أن الاتصال الفوري يعني الاتصال الذي يحدث في "الوقت الفعلي" — حيث يقوم شخصان أو أكثر بتبادل المعلومات والرد على بعضهما البعض فوراً. مثل المحادثة، ولكن يمكن أن يتم ذلك في النص عبر قنوات مختلفة.

بالنسبة للاتصال المؤجل، أعني الاتصال الذي يتضمن تأخراً بين إرسال واستلام الرسائل، كما في البريد الإلكتروني. ولكنه يمكن أن يتم الآن عبر قنوات مختلفة.

• للاتصال الفوري: نعم/لا/لست متأكداً

• للاتصال المؤجل: نعم/لا/لست متأكداً

29. إذا كنت تستخدم تقنيات الدردشة عبر الإنترنت في التدريس، ما هي التحديات الرئيسية لاستخدامها؟

30. كم مرة تشغل الكاميرا خلال هذه الأنواع من جلسات التدريس

قيم من 1 = أبداً إلى 7 = دائماً

• المحاضرات عبر الإنترنت

• جلسات المجموعات الصغيرة/الندوات

• جلسات المعمل (مثل مختبرات الكيمياء، البيولوجيا، الحاسوب)

• جلسات فردية مع معلميك

• جلسات الدراسة عبر الإنترنت مع الطلاب الآخرين

• كيف تقرر ما إذا كان ينبغي عليك تشغيل كاميرا الويب الخاصة بك أثناء الأنشطة التعليمية والدراسية المختلفة؟

31. هل يشغل معلموك عادةً كاميراتهم خلال المحاضرات عبر الإنترنت والأنشطة الأخرى؟

• المحاضرات عبر الإنترنت

• جلسات المجموعات الصغيرة/الندوات

• جلسات المعمل (مثل مختبرات الكيمياء، البيولوجيا، الحاسوب)

• جلسات فردية مع معلميك

• جلسات الدراسة عبر الإنترنت مع الطلاب الآخرين

32. ما رأيك فيما إذا كان المعلمون يشغلون كاميرات الويب الخاصة بهم أم لا؟

القسم الرابع: هذا القسم حول تجاربك مع الأمان والخصوصية عبر الإنترنت في دراستك

33. هل لديك أي مخاوف بشأن الأمان والخصوصية عند استخدام الأجهزة التالية في الدراسة: للأجهزة التي لا

(قيم من 1 = لا مخاوف إلى 7 = مخاوف كبيرة)

• كمبيوتر مكتبي تابع للمؤسسة

• كمبيوتر محمول تابع للمؤسسة

• جهاز لوحي تابع للمؤسسة

• هاتف ذكي تابع للمؤسسة

• كمبيوتر مكتبي شخصي

• كمبيوتر محمول شخصي

• جهاز لوحي شخصي

• هاتف ذكي شخصي

34. لأي أجهزة لديك مخاوف بشأنها، يرجى شرح مخاوفك بإيجاز:

35. هل لدى مؤسستك سياسات حول قضايا الأمان والخصوصية المتعلقة باستخدام التكنولوجيا في التدريس عبر

الإنترنت (مثل استخدام تقنيات المؤتمرات عبر الفيديو والدردشة عبر الإنترنت)؟

• نعم

• لا

- لست متأكدًا/لا أعرف
- 36. هل تقدم مؤسستك تدريباً لدعم الطلاب في قضايا الأمان والخصوصية عبر الإنترنت؟
 - نعم
 - لا
 - لست متأكدًا/لا أعرف
- 37. هل شاركت في أي من هذه التدريبات؟
 - نعم
 - لا
- 38. يرجى وصف باختصار أي تدريب تعرفه (سواءً حضرت أم لا):
- 39. هل أنت قلق بشأن قضايا الأمان والخصوصية فيما يتعلق بالأنشطة التالية) إذا كنت لا تستخدم التقنية في هذا) قيم من 1 = ليس قلقًا على الإطلاق إلى 7 = قلق جدًا)
 - استخدام تقنيات المؤتمرات عبر الفيديو في جلسة التدريس
 - استخدام تقنيات الدردشة عبر الإنترنت في جلسات التدريس
 - استخدام تقنيات المؤتمرات عبر الفيديو في الدراسة مع الطلاب الآخرين
 - استخدام تقنيات الدردشة عبر الإنترنت في الدراسة مع الطلاب الآخرين
- 40. هل يمكنك وصف أي مخاوف معينة لديك فيما يتعلق باستخدام تقنيات المؤتمرات عبر الفيديو والدردشة عبر الإنترنت في التدريس:
- 41. تشير الدراسات إلى أن أكثر من 50% من الأشخاص لا يقرأون أسئلة الاستبيانات بعناية. إذا كنت تقرأ هذا السؤال، يرجى اختيار "ثلاثة"
 - واحد
 - اثنان
 - ثلاثة
 - أربعة
- 42. هل أنت قلق حاليًا بشأن أي من قضايا الأمان والخصوصية التالية فيما يتعلق بالتدريس عبر الإنترنت
 - 43. (قيم من 1 = ليس قلقًا على الإطلاق إلى 7 = قلق جدًا)
 - تسجيل المحاضرات/الندوات عبر الإنترنت دون علمك
 - حضور أشخاص غير مصرح لهم في جلسات التدريس عبر الإنترنت
 - مقاطعة أشخاص غير مصرح لهم لجلسات التدريس عبر الإنترنت
 - تسجيل الطلاب الآخرين أو التقاط لقطات شاشة دون إذن أثناء جلسات التدريس عبر الإنترنت (مثل استخدام كاميرا الهاتف)
 - استخدام عملك كأمثلة دون إذنك أثناء جلسات التدريس عبر الإنترنت
 - قيام الطلاب الآخرين بالتعليقات غير اللائقة أثناء جلسات التدريس عبر الإنترنت (مثل التعليقات الجنسية أو العنصرية)
 - تعرضك للمضايقات من قبل الطلاب الآخرين خلال جلسات التدريس عبر الإنترنت
 - عدم تشغيل المعلم للكاميرا في جلسات التدريس
 - عدم تشغيل الطلاب الآخرين للكاميراتهم في الجلسات عبر الإنترنت
 - الاضطرار إلى تشغيل الكاميرا أثناء الامتحان عبر الإنترنت لتمكين المعلم من مراقبتك في الوقت الفعلي
 - الاضطرار إلى تسجيل فيديو لنفسك أثناء الامتحانات عبر الإنترنت ليتمكن المعلم من مراجعة الفيديو لاحقًا
- 44. يرجى إضافة أي تعليقات حول هذه القضايا، خاصة أي مشكلات محددة واجهتها في هذا المجال أو مخاوف مشابهة:
- 45. تشير الدراسات إلى أن أكثر من 50% من الأشخاص لا يقرأون الأسئلة بعناية. إذا كنت تقرأ هذا الفقرة، يرجى اختيار "اثنان"
 - واحد
 - اثنان

- ثلاثة
- أربعة

46. أخيرًا، هذه بعض الأسئلة عن نفسك. سيتم استخدامها لأغراض إحصائية فقط.

47. ما هو جنسك؟

- ذكر
- أنثى

• يفضل عدم القول

48. كم عمرك؟ (بالسنة الأقرب)

Appendix C: Consent Forms and Questionnaires for Studies 3 and 4

C1: Consent form and questionnaire for the UK participants

Privacy and security issues in online teaching in higher education, before and since the pandemic

Thank you for your interest in taking part in this survey.

This survey is part of my PhD research at the University of York. I am interested in gathering information about your experiences of privacy and security issues of online teaching at a higher education institution both before and since the coronavirus pandemic.

In order to participate you need to be:

- Over the age of 18
- Teach (either full time or part time) at a higher education institution (i.e. university, university of applied sciences, polytechnic, tertiary level educational institution or equivalent - if you are not sure, please complete the questionnaire, we can check eligibility later)

Your participation is completely voluntary and you are free to withdraw at any time, without having to provide a reason and without any negative consequences. At the beginning of the questionnaire, you will be given a unique code, if you wish to withdraw within a period of up to one week after participation, simply email me with your code and all your data will be deleted.

The questionnaire should take about 15-20 minutes to complete (you can do it in several parts if you wish, the software will save your answers and take you back to the right place, and short answers to the open-ended questions are fine and they are optional!). All the information you provide will be completely confidential and anonymised, so you will not be identifiable in any reports or publications. The original data will only be seen by myself, Basmah Almekhled, a PhD student in the Department of Computer Science at the University of York, and my supervisor Professor Helen Petrie. There are no known risks or benefits to participating in the questionnaire.

None of the questions will ask anything that could reveal anything that would compromise your online privacy and security, they are all general questions. The survey does not involve video and audio recording. All participants who are interested can receive a report on the results of the survey. To receive the report, you will need to provide an email address, that address will be deleted as soon as the report is sent and will not be used for any other purpose. I am also interested in doing some

follow-up in-depth interviews, you will be asked at the end of the survey if you are interested in participating in an interview, which is totally optional. If you are, you will be asked for your email address. Again, that will only be used to contact you about the interview and will be deleted as soon as that happens

If you have any questions or concerns, please contact me, Basmah Almekhled (ba913@york.ac.uk) or my supervisor, Professor Helen Petrie (helen.petrie@york.ac.uk).

In accordance with data protection law, the University of York is the Data Controller for this research project. This means that the University is responsible for making sure your personal information is kept secure, confidential, and anonymous. The University will also ensure that the information is only used in the way you have been told it will be used. Information from this study will be stored on University of York's cloud storage systems. The University's cloud storage solution is provided by Google, which means that data can be located at any of Google's globally spread data centres. The University has data protection compliant arrangements in place with this provider (see <https://www.york.ac.uk/it-services/google/policy/privacy/>). The University processes personal data for research purposes under Article 6 (1) (e) of the General Data Protection Regulation (GDPR). The data will be kept until the final marks are formally approved for the module. If you have concerns about how your information is being processed, please contact the University's Data Protection Officer at dataprotection@york.ac.uk. If you are concerned about the way in which the University has handled your personal data, you have a right to lodge a complaint to the Information Commissioner's Office (Tel: + 44 303 123 1113, see www.ico.org.uk/concerns for more information).
Consent If you are happy to participate in the survey, please read and confirm the statements below. If you do not wish to participate, simply close this window and nothing will be recorded.

1. I confirm that I have read and understood the information explaining this questionnaire and the implications of taking part in it.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without any negative consequences. In addition, if I do not wish to answer any questions, I am free to do so. I understand that if I withdraw after taking part in some or all of the questionnaire, I may request that the information I provided be deleted but that I must do so within one week of the questionnaire.
3. I confirm I am aware of who to contact if I wish to request that my information be deleted.
4. I also understand that my personal information is confidential and that my data will be anonymised. Only Basmah Almekhled and her supervisor Helen Petrie will have access to the information in its original format. I understand that I will not be identified or identifiable in any materials related to the research.
5. I understand that there are no known risks to participating in this questionnaire.
6. I agree to answer this questionnaire.

I have understood the nature of the study, confirm the above statements and am happy to participate.

Code, Please note this unique code, in case you wish to contact the researchers or withdraw from the study:

Section1 This first set of questions is about your higher education institution, so we can understand the context within which you work, particularly about online teaching

1. What is the full name of your institution (this will only be used to check the size and type of institution; it will not be published anywhere)

2. In which kind of department do you work?

- Architecture
- Arts/Humanities (e.g.history, languages)
- Administrative and Financial sciences
- Computer science, Information science
- Engineering
- Medical sciences (medicine, dentistry, nursing)
- Health sciences
- Physical sciences (e.g. physics, chemistry)
- Social sciences (e.g. psychology, sociology)
- Other, please specify

4. Approximately how long have you been teaching in higher education in total?

- Less than a year
- 1 year to 5 years
- 6 years to 10 years
- 11 years to 15 years
- More than 15 years

5. Before the coronavirus pandemic, was the method of teaching at your institution generally:

- Face-to-face (i.e. all lectures, seminars, practicals etc were conducted in person, although resources such as course notes, reading, and timetables might have been provided online)
- Blended (i.e. teaching was a mix of face-to-face and online delivery)
- Online only

6. In response to the pandemic, did teaching at your institution move online?

- Moved totally online
- Moved partly online
- Other, please explain

7. Please add any information about how teaching at your institution has changed due to the pandemic

Section 2 This section is about your personal teaching practices, both before and since the pandemic.

Some of the questions in the rest of the survey are about "online privacy and security " in relation to your experience of teaching and studying. What does the term "online security and privacy" mean to you?

By "online security and privacy" in this survey, I mean that a person's data, including their identity, is not accessible to anyone other than themselves and others who they have authorised and that their computing devices work properly and are free from unauthorized interference.

8. Before the pandemic, how would you rate the typical level of student participation (i.e. their active contributions to discussions, question asking etc) in the different modes of teaching (scored as 1 = very little to 7 = lots of participation)

- Lectures
- Small group discussions/seminars
- Lab sessions (e.g. chemistry, biology, or computer labs)
- One-to-one sessions with teachers
- Fieldwork (i.e. sessions away from the institution)

9. Since the pandemic, how would you rate the typical level of student participation (i.e. their active contributions to discussions, question asking etc) in the different modes of online teaching (scored as 1 = very little to 7 = lots of participation)

- Lectures
- Small group discussions/seminars
- Lab sessions (e.g. chemistry, biology, or computer labs)
- One-to-one sessions with teachers
- Fieldwork (i.e. sessions away from the institution)

10. Since the pandemic, in live online teaching sessions, do you think the level of participation of students is lower if they know the session is being recorded for later viewing?(scored as 1 = Not at all to 7 = Very much)

11. Please provide any information about how you think student participation in teaching sessions has changed since the pandemic, and how it is affected by recording of teaching sessions.

12. Before the pandemic, did your students submit work online ...

for feedback only (not as part of formal assessment) Yes/No/Not sure

for formal assessments Yes/No/Not sure

for online exams Yes/No/Not sure

13. Since the pandemic, have your students submitted work online ...

for feedback only (not as part of formal assessment) Yes/No/Not sure

for formal assessments Yes/No/Not sure

for online exams Yes/No/Not sure

14. Since the pandemic, have you used any particular procedures to ensure the security and privacy of students' work which they submit online?

15. During the pandemic, what have been the main challenges for you in teaching?

Section 3 This section is about your technology use for teaching and other work before and during the pandemic

16. Before the pandemic, did you used videoconferencing technologies (e.g. Blackboard Collaborate, Google Meet/Hangout, Microsoft Teams, Skype, Webex, Zoom etc) for any of your institutional work (teaching)?

Yes /No / Not sure

17. Since the pandemic, have you used videoconferencing technologies (e.g. Blackboard Collaborate, Google Meet/Hangout, Microsoft Teams, Skype, Webex, Zoom etc) for any of your institutional work (teaching)?

Yes /No / Not sure

18. If you use videoconferencing technologies for teaching, what are the main challenges of using them?

19. Since the pandemic, have you used any online chat technologies, for either immediate or delayed communication, for your courses or use them for teaching?

Remember that by immediate communication I mean communication that happens in “live” or “real-time” — two or more people are exchanging information and responding to each other immediately. So, like a conversation, but it could be taking place in text over various channels.

By detailed communication, I mean communication that includes a lag between sending and receiving the messages, as in email. But now it can take place over various channels.

for immediate communication Yes/ No/ Not sure

for delayed communication Yes/ No/ Not sure

20. If you use online chat technologies for teaching, what are the main challenges of using them?

21. How often do you turn on your webcam during the following activities (scored as 1 = Never to 7 = Very frequently)

- Online lecture
- Small group sessions/seminars
- Lab sessions (e.g. chemistry, biology, or computer labs)

- Online study sessions with other students

22. How do you decide whether or not to turn on your webcam during different online teaching?

23. Do students typically have their webcam on during these types of online teaching (scored as 1 = Never to 7 = Very frequently)

- Online lecture
- Small group sessions/seminars
- Lab sessions (e.g. chemistry, biology, or computer labs)
- Online study sessions with other students

24. How do you feel about whether students have their webcams on or not?

Section 4 Intro This section is about your experiences of online security and privacy in your teaching

25. Do you have any concerns about the security and privacy of using the following devices for institutional work (scored as 1 = No concerns to 7 = Great concerns)

- Institution desktop
- Institution laptop
- Institution tablet
- Institution smartphone
- Personal Desktop
- Personal laptop
- Personal tablet
- Personal smartphone

26. For any devices about which you have security and privacy concerns, please briefly explain your concerns:

27. Does your institution have policies about security and privacy issues regarding the use of technology for online teaching and other work (e.g. for the use of videoconferencing and online chat technologies)?

Yes/ No /I'm not sure/don't know

28. Please briefly describe what you know about your institution's policies about the use of technology for online teaching.

29. Does your institution offer training to support staff in online security and privacy issues?

Yes/ No/ I'm not sure/don't know

30. Have you taken any such training?

Yes/ No

31. Please briefly describe any training you are aware of (whether you have taken it or not):

32. Are you concerned about security and privacy issues about the following activities (scored as 1 = Not at all concerned to 7 = Very concerned)

- Using videoconferencing for teaching
- Using online chat technologies for teaching

33. Could you briefly describe any particular concerns you have about using videoconferencing and online chat technologies for teaching:

34. Studies show that over 50% of people don't read survey questions carefully. If you are reading this question, please select 'three':

- one
- two
- three
- four

35. Are you currently concerned about any of these security and privacy issues about your online teaching (scored as 1 = Not at all concerned to 7 = Very concerned)

- My online lectures being recorded without my knowledge
- My online seminars being recorded without my knowledge
- My online teaching materials (e.g. slide packs, notes, reading lists) are being re-used by others without my authorization
- My online teaching materials (e.g. slide packs, notes, reading lists) being shared with others without my authorization
- Students not turning on their webcams during sessions
- Unauthorised people attending sessions
- Unauthorised people interrupting sessions
- Students making recordings without your permission during online teaching sessions (e.g. using their phone)
- Accidentally sharing the wrong window that contains private information

36. Please add any comments on these issues, particularly any specific problems you have had in this area or other similar concerns:

37. Are you currently concerned about any of these privacy and security issues about online assessments and examinations (scored as 1 = Not at all concerned to 7 = Very concerned):

- Students colluding with each other in online individual assessments
- Students cheating in other ways in online assessments
- Students colluding with each other in online examinations
- Students cheating in other ways in online examinations

38. Please add any comments on these issues, particularly any specific problems you have had in this area or other similar concerns:

39. Studies show that over 50% of people don't read questions carefully. If you are reading this paragraph, please select 'Two':

One/ Two/ Three/ Four

Demographics Finally, this section asks for some information about yourself, this will only be used for statistical purposes

40. What is your gender?

- Male
- Female
- Non-binary
- Prefer to self-identify, provide a label if you wish
- Prefer not to say

41. How old are you?

42. What is your highest level of education?

- Bachelor's degree
- Masters' Degree
- Doctorate
- Other, please specify

C2: Consent form and questionnaire in the KSA participants

قضايا الخصوصية والأمان عبر الإنترنت في التدريس والعمل بالتعليم العالي، قبل ومنذ بدء جائحة كورونا

شكرا لك على اهتمامك بالمشاركة في هذا الاستبانة .

هذا الاستطلاع جزء من بحثي لدرجة الدكتوراه في جامعة يورك، يهتم هذا البحث بجمع المعلومات حول تجارب أعضاء هيئة التدريس لقضايا الخصوصية وقياس درجة الأمان في أثناء استخدام الانترنت لغرض التدريس والقضايا الأكاديمية الأخرى لدى مؤسسات التعليم العالي قبل وأثناء جائحة كورونا الفئة المستهدفة في هذا البحث :

- من كان على راس العمل أثناء انتقال التعليم من الحضوري إلى التعليم عن بعد في جائحة كورونا
- التدريس (إما بدوام كامل أو بدوام جزئي) في مؤسسة للتعليم العالي مثل: الجامعات، والكليات، ومعاهد الفنون التطبيقية، ومؤسسات التدريب المهني، سواء العامة أو الخاصة- (إذا لم تكن متأكدًا، يرجى إكمال الاستبانة، ويمكننا التحقق من الأهلية لاحقًا).

المشاركة في هذا البحث تطوعية تمامًا، وللمشارك الحرية في الانسحاب في أي وقت، دون الحاجة إلى إبداء سبب وبدون أي عواقب سلبية أو مسؤولية.

في بداية الاستبانة، سيتم إعطاؤك رمزًا فريدًا، إذا كنت ترغب في الانسحاب خلال أسبوع واحد بعد المشاركة، وما عليك سوى إرسال الرمز إلى الباحث بالبريد الإلكتروني؛ سيتم حذف جميع بياناتك . يستغرق استكمال الاستبانة من 15 إلى 20 دقيقة (يمكنك القيام بذلك على أجزاء وفي اوقات مختلفه إذا كنت ترغب في ذلك، سيحفظ البرنامج إجاباتك ويعيدك إلى المكان الصحيح، والإجابات القصيرة للأسئلة المفتوحة اختيارية، ولكن أتمنى منك الاجابة عليها قدر المستطاع)

جميع المعلومات التي يقدمها المشاركون سرية تمامًا، ومجهولة المصدر، لذلك لن يتم التعرف عليك من أي تقارير أو منشورات. وسوف تطلع الباحثة بسمة آل مخلص على هذه البيانات مع مشرفة البحث البروفيسور هيلين بيتري بشكل سري ومحافظ على الخصوصية

كما يجدر التنويه أنه لا توجد مخاطر، أو فوائد معروفة حول المشاركة في الاستبيان، و لن يسأل المشاركون أي سئلة تنتهك خصوصية وأمان عضو هيئة التدريس المشارك في الإجابة على هذه الاستبانة، وجميع الأسئلة عامة ولا تتضمن أي تسجيل صوتي أو مرئي.

كما يمكن لجميع المشاركين المهتمين بنتائج الاستبانة الحصول على تقرير عن نتائج الاستطلاع، ومن يرغب بذلك يرجى تزويد الباحثة بعنوان البريد الإلكتروني، وفور إرسال التقرير سيتم حذف العنوان المرسل للباحثة تلقائيًا، ولن يتم استخدام عنوان البريد لأي غرض آخر.

الباحثة مهتمة أيضًا بإجراء بعض المقابلات المتعمقة للمتابعة في هذا الموضوع، سيتم سؤالك في نهاية الاستبيان عما إذا كنت مهتمًا بالمشاركة في مقابلة، وهذا الأمر اختياري تمامًا. وخصوصية المشارك وبريده الإلكتروني ستكون ضمن الخصوصية القائم عليها هذا البحث، ولن يفقدها المشارك في المقابلة.

إذا كان لديك أي أسئلة أو استفسارات، يمكنك الاتصال بي، بسمة آل مخلص (ba913@york.ac.uk) .

او مشرفتي البروفيسور هيلين (helen.petrie@york.ac.uk)

تجدر الإشارة إلى أن قانون حماية البيانات في جامعة يورك وهي وحدة تحكم البيانات لهذا المشروع البحثي؛ وهذا يعني أن الجامعة مسؤولة عن التأكد من الحفاظ على معلوماتك الشخصية آمنة، وسرية، ومجهولة الهوية. كما تتضمن الجامعة استخدام المعلومات فقط بالطريقة المشروحة فيما سبق. سيتم تخزين المعلومات المستقاة من هذه الدراسة على أنظمة التخزين السحابية في جامعة يورك. يتم توفير حل التخزين السحابي للجامعة من قبل قوقل. لدى الجامعة (https://www.york.ac.uk/it-services/google/policy/privacy/) ترتيبات متوافقة مع حماية البيانات مع هذا المزود انظر

تقوم الجامعة بمعالجة البيانات الشخصية لأغراض البحث بموجب المادة 6 (1) (هـ) من اللائحة العامة لحماية

(GDPR) البيانات. سيتم الاحتفاظ بالبيانات حتى تتم الموافقة رسميًا على العلامات النهائية للوحدة

إذا كانت لديك مخاوف بشأن كيفية معالجة معلوماتك، يرجى الاتصال بمسؤول حماية البيانات في الجامعة على

إذا كنت قلقاً بشأن الطريقة التي تعاملت بها الجامعة مع بياناتك الشخصية، يحق لك تقديم شكوى إلى مكتب مفوض المعلومات

(لمزيد من المعلومات www.ico.org.uk/concerns هاتف: + 44 303 123 1113)

إذا كنت مهتماً بالمشاركة في الاستبانة، فيرجى قراءة العبارات الواردة أدناه وتأكيدها. إذا كنت لا ترغب في المشاركة، ببساطة أغلق هذه النافذة ولن يتم تسجيل أي شيء.

1. أؤكد أنني قد قرأت وفهمت المعلومات التي تشرح هذا الاستبانة وآثار المشاركة فيه
2. أفهم أن مشاركتي طوعية وأني حر في الانسحاب في أي وقت دون أي عواقب سلبية. بالإضافة إلى ذلك، إذا كنت لا أرغب في الرد على أي أسئلة، فأنا حر القيام بذلك.
3. أفهم أنه إذا انسحبت بعد المشاركة في بعض أو كل الاستبيان، فقد أطلب حذف المعلومات التي قدمتها، ولكن يجب أن أفعل ذلك في غضون أسبوع واحد من المشاركة.
4. أؤكد أنني على علم بمن يجب الاتصال به إذا كنت أرغب في طلب حذف معلوماتي وأفهم أيضاً أن معلوماتي الشخصية سرية وأن بياناتي ستكون مجهولة المصدر. فقط بسملة ال مخلد ومشرفتها هيلين بيتري هم من يمكنهم الوصول إلى المعلومات بصيغتها الأصلية.
5. أفهم أنه لن يتم التعرف على هويتي أو التعرف على هويتي في أي مواد متعلقة بالبحث.
6. أفهم أنه لا توجد مخاطر معروفة للمشاركة في هذا الاستبانة.

أوافق على الإجابة على هذا الاستبانة.

○ لقد فهمت طبيعة الدراسة، وأكدت العبارات أعلاه ويسعدني المشاركة.
يرجى ملاحظة هذا الرمز الفريد، في حالة رغبتك في الاتصال بالباحثين أو الانسحاب من الدراسة:

القسم الأول: هذا الجزء من الأسئلة يتعلق بمؤسستك التعليمية العليا، حتى نتمكن من فهم السياق الذي تعمل فيه، وخاصة فيما يتعلق بالتدريس عبر الإنترنت.

1. ما هو الاسم الكامل لمؤسستك؟ (سيتم استخدام هذا فقط للتحقق من حجم ونوع المؤسسة، ولن يتم نشره في أي مكان)
2. في أي قسم تعمل؟

- الهندسة المعمارية
- الفنون/العلوم الإنسانية (مثل التاريخ، اللغات)
- العلوم الإدارية والمالية
- علوم الكمبيوتر، علوم المعلومات
- الهندسة
- العلوم الطبية (الطب، طب الأسنان، التمريض) علوم الصحة
- العلوم الفيزيائية (مثل الفيزياء، الكيمياء)
- العلوم الاجتماعية (مثل علم النفس، علم الاجتماع)

أخرى، يرجى التحديد

3. كم تقريباً مدة التدريس في التعليم العالي بشكل عام؟

- أقل من سنة
- من سنة إلى 5 سنوات
- من 6 سنوات إلى 10 سنوات
- من 11 سنة إلى 15 سنة
- أكثر من 15 سنة

4. قبل جائحة كورونا، هل كانت طريقة التدريس في مؤسستك عموماً:

- حضورياً (أي أن جميع المحاضرات، الندوات، الجلسات العملية كانت تُجرى شخصياً، على الرغم من أنه قد يتم توفير الموارد مثل الملاحظات، والقراءة، والجداول الزمنية عبر الإنترنت)

- مدمجة (أي أن التدريس كان مزيجًا من الحضور الشخصي والتسليم عبر الإنترنت)
- عبر الإنترنت فقط

5. استجابة للجائحة، هل انتقل التدريس في مؤسستك عبر الإنترنت؟

- انتقل كليًا عبر الإنترنت
- انتقل جزئيًا عبر الإنترنت
- أخرى، يرجى التوضيح

6. يرجى إضافة أي معلومات حول كيفية تغير التدريس في مؤسستك بسبب الجائحة.

القسم الثاني: هذا الجزء يتعلق بممارساتك الشخصية في التدريس، قبل وبعد الجائحة.

ماذا يعني لك "الأمان والخصوصية عبر الإنترنت"؟

بأمان وخصوصية عبر الإنترنت" في هذا الاستطلاع، أعني أن بيانات الشخص، بما في ذلك هويته، لا يمكن الوصول إليها من قبل أي شخص غيره أو غير الأشخاص الذين سمح لهم بذلك، وأن أجهزتهم الحاسوبية تعمل بشكل صحيح وخالية من التدخل غير المصرح به.

7. قبل الجائحة، كيف كنت تقيم مستوى مشاركة الطلاب النموذجي (أي مساهماتهم الفعالة في المناقشات، طرح الأسئلة، إلخ) في طرق التدريس المختلفة () يتم تقييمها من 1 = قليل جدًا إلى 7 = الكثير من المشاركة)

- المحاضرات
- المناقشات الجماعية الصغيرة/الندوات
- جلسات المختبرات (مثل مختبرات الكيمياء، الأحياء أو الكمبيوتر)
- جلسات واحد لواحد مع المعلمين
- العمل الميداني (أي الجلسات خارج المؤسسة)

8. إذا كنت تستخدم تقنيات المؤتمرات عبر الفيديو للتدريس، ما هي التحديات الرئيسية لاستخدامها؟
9. قبل الجائحة، هل كنت تستخدم أي تقنيات دردشة عبر الإنترنت (مثل Facebook Messenger، Discord، Slack، Telegram، WhatsApp) إما للتواصل الفوري أو المتأخر، في دوراتك الدراسية أو استخدامها للتدريس؟
- بالتواصل الفوري، أعني التواصل الذي يحدث "مباشرة" أو "في الوقت الفعلي" — يتبادل شخصان أو أكثر المعلومات ويستجيبون لبعضهم البعض فورًا. مثل محادثة، ولكن يمكن أن تحدث في نص عبر قنوات مختلفة. بالتواصل المتأخر، أعني التواصل الذي يتضمن تأخرًا بين إرسال الرسائل واستلامها، كما في البريد الإلكتروني. ولكن الآن يمكن أن يحدث عبر قنوات مختلفة.
- للتواصل الفوري نعم/ لا/ غير متأكد
 - للتواصل المتأخر نعم/ لا/ غير متأكد
10. منذ الجائحة، هل استخدمت أي تقنيات دردشة عبر الإنترنت، إما للتواصل الفوري أو المتأخر، لدوراتك الدراسية أو استخدامها للتدريس؟
- تذكر أن التواصل الفوري أعني التواصل الذي يحدث "مباشرة" أو "في الوقت الفعلي" — يتبادل شخصان أو أكثر المعلومات ويستجيبون لبعضهم البعض فورًا. مثل محادثة، ولكن يمكن أن تحدث في نص عبر قنوات مختلفة.
- بالتواصل المفصل، أعني التواصل الذي يتضمن تأخرًا بين إرسال الرسائل واستلامها، كما في البريد الإلكتروني. ولكن الآن يمكن أن يحدث عبر قنوات مختلفة.
- للتواصل الفوري نعم/ لا/ غير متأكد
 - للتواصل المتأخر نعم/ لا/ غير متأكد
11. إذا كنت تستخدم تقنيات الدردشة عبر الإنترنت للتدريس، ما هي التحديات الرئيسية لاستخدامها؟
12. كم مرة تقوم بتشغيل كاميرتك أثناء الأنشطة التالية (يتم تقييمها من 1 = أبدًا إلى 7 = بشكل متكرر جدًا)
- المحاضرة عبر الإنترنت
 - الجلسات الجماعية الصغيرة/الندوات
 - جلسات المختبرات (مثل مختبرات الكيمياء، الأحياء أو الكمبيوتر)
 - جلسات الدراسة عبر الإنترنت مع طلاب آخرين
13. كيف تقرر ما إذا كنت ستشغل كاميرتك أثناء التدريس عبر الإنترنت أم لا؟
14. هل يقوم الطلاب عادة بتشغيل كاميراتهم أثناء هذه الأنواع من التدريس عبر الإنترنت (يتم تقييمها من 1 = أبدًا إلى 7 = بشكل متكرر جدًا):
- المحاضرة عبر الإنترنت
 - الجلسات الجماعية الصغيرة/الندوات
 - جلسات المختبرات (مثل مختبرات الكيمياء، الأحياء أو الكمبيوتر)
 - جلسات الدراسة عبر الإنترنت مع طلاب آخرين
15. كيف تشعر بشأن ما إذا كان الطلاب يشغلون كاميراتهم أم لا؟
- القسم الرابع: هذا الجزء يتعلق بتجاربك في الأمان والخصوصية عبر الإنترنت في التدريس.**
16. هل لدى مؤسستك سياسات بشأن قضايا الأمان والخصوصية فيما يتعلق باستخدام التكنولوجيا للتدريس عبر الإنترنت وأعمال أخرى (مثل استخدام تقنيات المؤتمرات عبر الفيديو والدردشة عبر الإنترنت)؟
- نعم/ لا/ لست متأكدًا/ لا أعرف
17. يرجى وصف بإيجاز ما تعرفه عن سياسات مؤسستك بشأن استخدام التكنولوجيا للتدريس عبر الإنترنت.
18. هل تقدم مؤسستك تدريبًا لدعم الموظفين في قضايا الأمان والخصوصية عبر الإنترنت؟
- نعم/ لا/ لست متأكدًا/ لا أعرف
19. هل تلقيت أي تدريب من هذا القبيل؟
- نعم/ لا
20. يرجى وصف بإيجاز أي تدريب تعرف عنه (سواء تلقيته أم لا):
21. هل تشعر بالقلق بشأن قضايا الأمان والخصوصية حول الأنشطة التالية (يتم تقييمها من 1 = لا قلق على الإطلاق إلى 7 = قلق جدًا)
- استخدام المؤتمرات عبر الفيديو للتدريس

• استخدام تقنيات الدردشة عبر الإنترنت للتدريس
22. هل يمكنك وصف أي مخاوف خاصة لديك بشأن استخدام تقنيات المؤتمرات عبر الفيديو والدردشة عبر الإنترنت للتدريس:

تظهر الدراسات أن أكثر من 50٪ من الناس لا يقرؤون أسئلة الاستطلاع بعناية. إذا كنت تقرأ هذا السؤال، يرجى اختيار "ثلاثة:"

- واحد
- اثنان
- ثلاثة
- أربعة

23. هل تشعر بالقلق بشأن أي من هذه القضايا الخاصة بالأمان والخصوصية بشأن تدريستك عبر الإنترنت حالياً (إيتم تقييمها من 1 = لا قلق على الإطلاق إلى 7 = قلق جداً)

- تسجيل محاضراتي عبر الإنترنت دون علمي
- تسجيل ندواتي عبر الإنترنت دون علمي
- إعادة استخدام مواد التدريس الخاصة بي (مثل حزم الشرائح، الملاحظات، قوائم القراءة) من قبل الآخرين دون إذني
- مشاركة مواد التدريس الخاصة بي (مثل حزم الشرائح، الملاحظات، قوائم القراءة) مع الآخرين دون إذني
- عدم تشغيل الطلاب لكاميراتهم أثناء الجلسات
- حضور أشخاص غير مصرح لهم الجلسات
- مقاطعة أشخاص غير مصرح لهم للجلسات
- قيام الطلاب بتسجيلات بدون إذنيك أثناء الجلسات عبر الإنترنت (مثل استخدام هواتفهم)
- مشاركة نافذة خاطئة تحتوي على معلومات خاصة عن طريق الخطأ

24. يرجى إضافة أي تعليقات حول هذه القضايا، خاصة أي مشاكل محددة واجهتها في هذا المجال أو أي مخاوف مماثلة:

25. هل تشعر بالقلق بشأن أي من هذه القضايا الخاصة بالأمان والخصوصية بشأن التقييمات والامتحانات عبر الإنترنت حالياً (يتم تقييمها من 1 = لا قلق على الإطلاق إلى 7 = قلق جداً):

- تواطؤ الطلاب مع بعضهم البعض في التقييمات الفردية عبر الإنترنت
- غش الطلاب بطرق أخرى في التقييمات عبر الإنترنت
- تواطؤ الطلاب مع بعضهم البعض في الامتحانات عبر الإنترنت
- غش الطلاب بطرق أخرى في الامتحانات عبر الإنترنت

26. يرجى إضافة أي تعليقات حول هذه القضايا، خاصة أي مشاكل محددة واجهتها في هذا المجال أو أي مخاوف مماثلة:

تظهر الدراسات أن أكثر من 50٪ من الناس لا يقرؤون الأسئلة بعناية. إذا كنت تقرأ هذه الفقرة، يرجى اختيار "اثنان:"

- واحد
- اثنان
- ثلاثة
- أربعة

المعلومات الديموغرافية: أخيراً، يطلب هذا القسم بعض المعلومات عن نفسك، وسيتم استخدامها فقط للأغراض الإحصائية.

27. ما هو جنسك؟

- ذكر
- أنثى
- تفضل عدم القول

28. كم عمرك؟

29. ما هو أعلى مستوى من التعليم حصلت عليه؟

- درجة البكالوريوس
- درجة الماجستير

- الدكتوراه
- أخرى، يرجى التحديد

Appendix D: Consent Forms and Questionnaires for Study 5

D1: Consent form and questionnaires for students in English

Students' privacy and security attitudes toward online teaching

Thank you for your interest in taking part in this study.

This study is part of my PhD research at the University of York in the UK. The study will be real word study in which you will be asked to complete a number of short questionnaires. You will receive an email from me (ba913@york.ac.uk) via your university email each time you need to complete a questionnaire.

Pre-study questionnaire:

This is the questionnaire you will complete today.

In this questionnaire, I will ask you questions about your privacy and security concerns and trust in different aspects of online teaching. This questionnaire should only take about 5- 10 minutes to complete.

Post-Online-Session Questionnaire:

You will complete this questionnaire after online session in (name of course). It will be a short questionnaire about your behaviours using the webcam online session you have just attended. This questionnaire should take about 2-3 minutes to complete.

Post-study questionnaire:

This final questionnaire you will do at the end of the study. I will ask you questions about using social media, your privacy and security concerns about social media and your trust in digital technologies in general. This questionnaire should take about 5-8 minutes to complete.

All participants who complete the study will be entered into a prize draw to win one of 10 gift vouchers from Amazon Saudi Arabia worth 100 Saudi riyals each.

This study has been reviewed and approved by the Ethics Committees at the Saudi Electronic University and the University of York.

Your participation is completely voluntary, and you are free to withdraw at any time, without having to provide a reason and without any negative consequences. At the beginning of each questionnaire, I will ask you to enter the last four numbers of your university ID. If you wish to withdraw within a period of up to one week after the end of the study, simply email me with your the four numbers and all your data will be deleted.

All the information you provide will be completely confidential and anonymised, so you will not be identifiable in any reports or publications. The original data will only be seen by myself, Basmah Almekhled, and my supervisor Professor Helen Petrie. There are no known risks or benefits to participating in the questionnaire. The survey does not involve video and audio recording. The information you provide will not be shared with the instructors on your course and will therefore have no bearing on your grades on the course.

In accordance with data protection law, the University of York is the Data Controller for this research

project. This means that the University is responsible for making sure your personal information is kept secure, confidential and anonymous. The University will also ensure that the information is only used in the way you have been told it will be used. Information from this study will be stored on the University of York's cloud storage systems.

The University's cloud storage solution is provided by Google, which means that data can be located at any of Google's globally spread data centres. The University has data protection compliant arrangements in place with this provider (see <https://www.york.ac.uk/it-services/google/policy/privacy/>). The University processes personal data for research purposes under Article 6 (1) (e) of the General Data Protection Regulation (GDPR). The data will be kept until the final marks are formally approved for the module. If you have concerns about how your information is being processed, please contact the University's Data Protection Officer at dataprotection@york.ac.uk. If you are concerned about the way in which the University has handled your personal data, you have a right to lodge a complaint to the Information Commissioner's Office (Tel: + 44 303 123 1113, see www.ico.org.uk/concerns for more information).

Informed Consent

If you are happy to participate in the study, please read and confirm the statements below. If you do not wish to participate, simply close this window and nothing will be recorded.

1. I confirm that I have read and understood the information explaining this study and the implications of taking part in it.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without any negative consequences. In addition, if I do not wish to answer any questions, I am free to do so. I understand that if I withdraw after taking part in some or all of the study, I may request that the information I provided be deleted but I must do so within one week of the end of the study.
3. I confirm I am aware of who to contact if I wish to request that my information be deleted.
4. I also understand that my personal information is confidential and that my data will be anonymised. Only Basmah Almekhled and her supervisor Helen Petrie will have access to the information in its original format. I understand that I will not be identified or identifiable in any

materials related to the research.

5. I understand that there are no known risks to participating in this study.

- I understand the nature of the study and am happy to participate

ID Please enter the last four numbers of your university ID, in case you wish to contact the researchers or withdraw from the study:

1. This set of statements is about your privacy concerns during online teaching classes.

For each statement, please select the extent to which you agree or disagree with it.

(scored as 1 = agree to 7 = disagree).

- It usually bothers me when I am asked for personal information during online teaching classes
- I sometimes think for a while if I am asked to provide personal information during online teaching classes
- It bothers me to give personal information to so many different courses for online teaching
- It bothers me that so much personal information is collected during online teaching courses
- Universities should never use students' personal information for any other purposes unless it has been authorized by the individual student
- When students give personal information during an online teaching session for some particular reason, the university should never use the information for any other purpose
- Universities should never sell students' personal information to another organization
- Universities should not share students' personal information with other organizations unless it has been authorized by the students
- Universities should devote more time and effort to preventing unauthorized access to students' personal information
- Universities should prevent unauthorized people from accessing students' personal information without considering the cost
- Universities should take more measures to ensure that unauthorized people cannot access students' personal information
- I am concerned that another student will use my personal information (e.g. captured facial images) without my permission.
- I am concerned that my personal information will be leaked by another student against my will
- I am concerned about my personal information (e.g. . my face, name, etc.) being exposed online.
- I am not comfortable with my personal details (e.g. photos, name, etc.) open to other participants in online teaching.
- I am not comfortable with my physical location and personal space (e.g. my room, my whereabouts etc.) being seen by other participants in online teaching classes.
- I am concerned that my instructor will use my contribution to an online class (e.g. my work being used as an example) without my permission.
- I am concerned that my classmates will use my contribution to an online session (e.g. my idea provided in an online group discussion) without my permission.
- Overall, I am concerned about my personal information when participating in online class activities (e.g. online group discussions)

2. This set of statements is about your level of trust in the Blackboard system. For each statement, please select the extent to which you agree or disagree with it.

- Blackboard guarantees the anonymity of users

- In Blackboard, I can express my opinion about studies, subjects, and instructors without any fear
- Blackboard ensures the security of my personal data
- Blackboard is efficient and always works reliably
- Blackboard is predictable and unchanging
- I can rely on Blackboard

3. This set of statements is about your trust in your university. For each statement, please select the extent to which you agree or disagree with it.

- SEU takes care of its students
- Graduates of SEU have no problem finding a job in their profession
- SEU is well recognised by employers in the labour market
- SEU applies the principles of ethics and social responsibility in its activities
- SEU provides opportunities for student personal development
- SEU is recognised internationally
- SEU uses new technology to improve my studies and gain knowledge and skills

4. This set of statements is about your trust in your (name of course) teacher

For each statement, please select the extent to which you agree or disagree with it.

- My teacher can be described as someone who listens very carefully to me
- It's important for my teacher to understand what my educational goals are
- My teacher understands me
- My teacher accepts me for who I am
- My teacher is careful not to dismiss my concerns
- It is difficult for my teacher to accept my nature
- My teacher cares about my education
- My teacher truly cares about my educational welfare
- My teacher is not the sort of person who goes out of his or her way to show compassion to me

5. This set of statements is about your trust in your classmates in (name of course)

For each statement, please select the extent to which you agree or disagree with it.

- Overall, the students in my (name of course) class are very trustworthy
- The students in my (name of course) class are friendly
- I can rely on my (name of course) classmates
- I trust that my (name of course) classmates will keep my personal information confidential
- We are usually considerate of one another's feelings in this (name of course) class

Demographics Finally, these are some questions about yourself. These will only be used for statistical purposes.

6. What is your gender? Male / Female / Prefer not to say

7. How old are you? (to nearest year)

8. What is your level of study?

Post-Session -Questionnaire(Students)

Please complete this short questionnaire as soon as possible after this week's (name of course) online session.

The questionnaire should take about 3 minutes to complete.

Thank you for your continued interest in taking part in this study.

Please enter the last four numbers of your university ID:

1. This set of questions is about whether the instructor, you and other students had the webcam on or off in this week's online
2. In this week's online session for (Name of course), did your instructor have their webcam on or off?
 - On
 - Off
 - I did not notice
3. In this week's online session for (Name of course), did any of the other students have their webcam on or off?
 - Yes
 - No
 - I did not notice
4. In this week's online session for (Name of course), did you have your webcam on or off?
 - On
 - Off
 - I didn't remember

Display This Question:

5. If In this week's online session for (Name of course), did you have your webcam on or off? = Offs
6. Why did you leave it off? (select all that apply)

Privacy:

- I was concerned about my physical location being seen
- I was concerned if other students made recordings or screenshots without my permission (e.g using their camera phone)

Distract :

- It makes me focus on how I look instead of the course content
- It would distract other students

Security:

- I do not know who can access recordings of online classes or where they are stored
- I am concerned that online classes might be hacked which will lead to disclosure of my personal information

Flexibility:

- It impairs my flexibility of where I can attend the session from (e.g attending from cafe)
- It makes it hard for me to move away from my computer
- It makes it hard for me to conduct another activities during the session

Practical:

- It overloads the bandwidth I have
- Any other reason, please explain briefly

Display This Question:

7. If In this week's online session for (Name of course), did you have your webcam on or off? = On
8. Why did you turn your webcam on? (Select all that apply)
 - It helped me keep focused
 - It made me feel more engaged
 - My instructor had their webcam on
 - Other students had their webcams on
 - Any other reason, please explain briefly

Post-Study-Questionnaire(Students)

Thank you again for your interest in taking part in this study.

This is the final questionnaire of the study and should take about 5 minutes to complete.

Please enter the last four numbers from your university ID:

The first set of questions is about using social media sites:

By social media sites I mean platforms such as Snapchat, Facebook, Instagram, Twitter, Linked In, and WhatsApp, that people use to communicate and share information, interests, and hobbies with others.

1. This set of statements is about your privacy concerns about using social media sites. For each statement, please select the extent to which you agree or disagree with it.

- It usually bothers me when social media sites ask me for personal information
- I sometimes think for a while when social media sites ask me to provide personal information
- It bothers me to give personal information to so many social media sites.
- It bothers me that social media site collect too much personal information.
- Social media site should never use individuals' personal information for any other purposes unless it has been authorized by the individual
- When people give personal information to a social media site for some reason, the social media site should never use the information for any other purpose.
- social media sites should never sell individuals' personal information to another organization.
- Social media sites should not share individuals' personal information with other organizations unless it has been authorized by the individuals.
- Social media sites should devote more time and effort to preventing unauthorized access to individuals' personal information.
- Social media sites should prevent unauthorized people from accessing individuals' personal information without considering the cost
- Social media sites should take more measures to ensure that unauthorized people cannot use their computers to access individuals' personal information
- I am concerned that participants on a social media site will use my personal information (e.g. captured facial images, name, etc.) for other purposes without my permission.
- I am not comfortable with my personal details (e.g. photos, name, etc.) being available to other participants on social media sites
- I am concerned that my personal information will be leaked by participants on a social media site against my will
- I am concerned about my personal information (e.g. . my face, name, etc.) being exposed online.

2. This next set of statements is about your behaviour in relation to online security. For each statement please rate how often you do each of these of security related behaviours on the scale from "Never" to "Always."

- I set my computer screen to automatically lock if I don't use it for a prolonged period of time.
- I use a password/passcode to unlock my laptop or tablet.
- I manually lock my computer screen when I step away from it.
- I use a PIN or passcode to unlock my mobile phone.

- I do not change my passwords unless I have to.
 - I use different passwords for different accounts that I have.
 - When I create a new online account, I try to use a password that goes beyond the site's minimum requirements.
 - I do not include special characters in my password if it's not required.
 - When someone sends me a link, I open it without first verifying where it goes.
 - I know what website I'm visiting based on its look and feel, rather than by looking at the URL bar.
 - I submit information to websites without first verifying that it will be sent securely (e.g., SSL, "https://," a lock icon)
 - When browsing websites, I mouseover links to see where they go, before clicking them.
 - If I discover a security problem, I continue what I was doing because I assume someone else will fix it.
 - When I'm prompted about a software update, I install it right away.
 - I try to make sure that the programs I use are up to date.
 - I verify that my anti-virus software has been regularly updating itself.
3. This set of statements is about your trust in technology in general. For each statement, please select the extent to which you agree or disagree with it.
- Due to the ICT technology, our lives are easier and more comfortable
 - Due to the ICT technology, our lives are safer
 - Science and technology are making our lives better
 - Science and technology are making our lives easier
 - I believe that new technologies are created for the good

D2: Measurement used for trust, privacy, and security in online teaching and digital technologies

Pre-Study Questionnaire		
Measurement Used	Items	References
Trust in VLE e.g. Blackboard	Blackboard guarantees the anonymity of users	Ejdys (2018) in th I adapted to Blackboard
	In Blackboard, I can express my opinion about studies, subjects, and instructors without any fear	
	Blackboard ensures the security of my personal data	
	Blackboard is efficient and always works reliably.	
	Blackboard is predictable and unchanging	
	I can rely on Blackboard	
Trust in institution	SEU takes care of its students	Ejdys (2018)

	Graduates of SEU have no problem finding a job in their profession SEU is well recognised by employers in the labour market SEU applies the principles of ethics and social responsibility in its activities SEU provides opportunities for student personal development SEU is recognised internationally SEU uses new technology to improve my studies and gain knowledge and skills	
Trust in teacher	My teacher can be described as someone who listens very carefully to me It's important for my teacher to understand what my educational goals are My teacher understands me My teacher accepts me for who I am My teacher is careful not to dismiss my concerns It is difficult for my teacher to accept my nature My teacher cares about my education My teacher truly cares about my educational welfare My teacher is not the sort of person who goes out of his or her way to show compassion to me	Cavanagh et al (2018)
Trust in classmates	Overall, the students in my (name of course) class are very trustworthy The students in my (name of course) class are friendly I can rely on my (name of course) classmates I trust that my (name of course) classmates will keep my personal information confidential We are usually considerate of one another's feelings in this (name of course) class	Rice and Schroeder(2018)
Privacy concerns in online teaching	Collection of Personal Information It usually bothers me when I am asked for personal information during online teaching classes I sometimes think for a while if I am asked to provide personal information during online teaching classes	Peng & Dutta (2022)

	It bothers me to give personal information to so many different courses for online teaching	
	It bothers me that so much personal information is collected during online teaching courses	
	Internal Secondary Use	
	Universities should never use students' personal information for any other purposes unless it has been authorized by the individual student	
	When students give personal information during an online teaching class for some particular reason, the university should never use the information for any other purpose	
	External Secondary use	
	Universities should never sell students' personal information to another organization	
	Universities should not share students' personal information with other organizations unless it has been authorized by the students	
	Improper Access	
	Universities should devote more time and effort to preventing unauthorized access to students' personal information	
	Universities should prevent unauthorized people from accessing students' personal information without considering the cost	
	Universities should take more measures to ensure that unauthorized people cannot access students' personal information	
Security concerns in online teaching	I do not feel secure about the online teaching resources and tools used in my online teaching classes .	
	I am concerned that online teaching resources and tools will not implement appropriate security measures for my protection.	
	I am concerned that hacking might occur during online teaching classes which will lead to the disclosure of my personal information.	
	I am concerned that my online teaching classes will be disrupted by hackers due to the poor security of the online teaching resources or tools.	

Privacy concerns during online teaching about teachers and classmates	I am concerned that another student will use my personal information (e.g. captured facial images) without my permission.	Kim (2022)
	I am concerned that my personal information will be leaked by another student against my will	
	I am concerned about my personal information (e.g. . my face, name, etc.) being exposed online.	
	I am not comfortable with my personal details (e.g. photos, name, etc.) open to other participants in online teaching.	
Privacy concerns about the student's location and personal space in online teaching classes	I am not comfortable with my physical location and personal space (e.g. my room, my whereabouts etc.) being seen by other participants in online teaching classes.	A new dimension of privacy concerns
Concerns about the privacy of information in online teaching situations	I am concerned that my instructor will use my contribution to an online class (e.g. my work being used as an example) without my permission.	A new dimension of privacy concerns
	I am concerned that my classmates will use my contribution to online classes (e.g. my idea provided in an online group discussion) without my permission.	
	Overall, I am concerned about my personal information when participating in online class activities (e.g. online group discussions)	

Post-Study Questionnaire

Measurement Used	Items	References
General security behaviour	# Device Securement	Egelman & Peer (2015)
	I set my computer screen to automatically lock if I don't use it for a prolonged period of time.	
	I use a password/passcode to unlock my laptop or tablet.	
	I manually lock my computer screen when I step away from it.	
	I use a PIN or passcode to unlock my mobile phone.	
	# Password Generation	

	I do not change my passwords unless I have to. I use different passwords for different accounts that I have. When I create a new online account, I try to use a password that goes beyond the site's minimum requirements. I do not include special characters in my password if it's not required. # Proactive Awareness When someone sends me a link, I open it without first verifying where it goes. I know what website I'm visiting based on its look and feel, rather than by looking at the URL bar. I submit information to websites without first verifying that it will be sent securely (e.g., SSL, "https://," a lock icon) When browsing websites, I mouseover links to see where they go, before clicking them. If I discover a security problem, I continue what I was doing because I assume someone else will fix it. # Updating When I'm prompted about a software update, I install it right away. I try to make sure that the programs I use are up to date. I verify that my anti-virus software has been regularly updating itself.	
Trust in digital technologies in general	Due to the ICT technology, our lives are easier and more comfortable Due to the ICT technology, our lives are safer Science and technology are making our lives better Science and technology are making our lives easier I believe that new technologies are created for the good	Ejdys (2018)
Privacy concern in social media	It usually bothers me when social media sites ask me for personal information I sometimes think for a while when social media sites ask me to provide personal information	

	It bothers me to give personal information to so many social media sites .	
	It bothers me that social media site collect too much personal information.	
	Secondary Use	
	Social media site should never use individuals' personal information for any other purposes unless it has been authorized by the individual	
	When people give personal information to a social media site for some reason, the social media site should never use the information for any other purpose.	
	social media sites should never sell individuals' personal information to another organization.	
	Social media sites should not share individuals' personal information with other organizations unless it has been authorized by the individuals.	
	Unauthorized Access	
	Social media sites should devote more time and effort to preventing unauthorized access to individuals' personal information.	
	Social media sites should prevent unauthorized people from accessing individuals' personal information without considering the cost	
	Social media sites should take more measures to ensure that unauthorized people cannot use their computers to access individuals' personal information	
Privacy concerns real-time online teaching	I am concerned that participants on a social media site will use my personal information (e.g. captured facial images, name, etc.) for other purposes without my permission.	Kim (2021) I adapted to use for social media sites
	I am not comfortable with my personal details (e.g. photos, name, etc.) being available to other participants on social media sites	
	I am concerned that my personal information will be leaked by participants on a social media site against my will	
	I am concerned about my personal information (e.g. . my face, name, etc.) being exposed online.	

D3: Consent form and questionnaire for teachers in English

Teachers' attitudes towards using webcams during online classes.

Thank you for your interest in taking part in this study.

This study is part of my PhD research at the University of York. You will be asked to complete two of short questionnaires, I will send you an email (from ba913@york.ac.uk) to your university email each time you need to complete a questionnaire. The two different questionnaires are described below.

Pre-study questionnaire:

This is the questionnaire you will complete today. I will ask you questions about attitudes toward webcam use during classes in general. It will take about two minutes to complete.

Post-Session Questionnaire:

You will complete this questionnaire after online classes. It will ask about your webcam use during the classes, the reasons for your choices, and your awareness of students' webcam status. This questionnaire will take approximately 2-3 minutes to complete.

Your participation in the study is completely voluntary and you are free to withdraw at any time, without having to provide a reason and without any negative consequences. At the beginning of the questionnaire, you will be asked to enter your course code, if you wish to withdraw within a period of up to one week after the end of the study, simply email me with your code and all your data will be deleted.

All the information you provide will be completely confidential and anonymised, so you will not be identifiable in any reports or publications and individual information will not be shared with the university. The original data will only be seen by myself, Basmah Almekhled, PhD student in the Department of Computer Science at the University of York, and my supervisor Professor Helen Petrie. There are no known risks or benefits in participating in the questionnaire. The study does not involve video and audio recording. The data will have no bearing on students' grades for the course nor will it have any bearing on faculty members' assessment (e.g. promotions, reviews etc).

If you have any questions or concerns about the study, please contact me, Basmah Almekhled (ba913@york.ac.uk) or my supervisor, Professor Helen Petrie (helen.petrie@york.ac.uk).

This study has been reviewed and approved by the Ethics Committees at the Saudi Electronic University and the University of York.

In accordance with data protection law, the University of York is the Data Controller for this research project. This means that the University is responsible for making sure your personal information is kept secure, confidential and anonymous. The University will also ensure that the information is only used in the way you have been told it will be used. Information from this study will be stored on the University of York's cloud storage systems. The University's cloud storage solution is provided by Google, which means that data can be located at any of Google's globally spread data centres. The University has data protection compliant arrangements in place with this provider (see <https://www.york.ac.uk/it-services/google/policy/privacy/>). The University processes personal data for research purposes under Article 6 (1) (e) of the General Data Protection Regulation (GDPR). The data will be kept until the final marks are formally approved for the module. If you have concerns about how your information is being processed, please contact the University's Data Protection Officer at dataprotection@york.ac.uk. If you are concerned about the way in which the University has handled your personal data, you have a right to lodge a complaint to the Information Commissioner's Office (Tel: + 44 303 123 1113, see www.ico.org.uk/concerns for more information).

Informed consent

If you are happy to participate in the study, please read and confirm the statements below. If you do not wish to participate, simply close this window and nothing will be recorded.

1. I confirm that I have read and understood the information explaining this study and the implications of taking part in it.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without any negative consequences. In addition, if I do not wish to answer any questions, I am free to do so. I understand that if I withdraw after taking part in some or all of the study, I may request that the information I provided be deleted but that I must do so within one week of the end of the study.
3. I confirm I am aware of who to contact if I wish to request that my information be deleted.
4. I also understand that my personal information is confidential and that my data will be anonymised. Only Basmah Almekhled and her supervisor Helen Petrie will have access to the information in its original format.
5. I understand that I will not be identified or identifiable in any materials related to the research.
6. I understand that there are no known risks to participating in this study.

- I understand the nature of the study and am happy to participate

Course Code Please enter your Course Code, in case you wish to contact the researchers or withdraw from the study:

Section 1: The first set of questions addresses teachers' attitudes toward using webcams during online classes and their prior experiences with online teaching.

1. Approximately how long have you been teaching using the blended method i.e. teaching a mix of face-to-face and online classes?

- Less than a year
- 1 year to 5 years
- 6 years to 10 years
- 11 years to 15 years
- More than 15 years

2. How often do you have your webcam on during online teaching classes? scored as 1 = Never to 7 = Always).

Demographics Finally, these are some questions about yourself. These will only be used for statistical purposes.

3. What is your gender?

- Male
- Female
- Prefer not to say

Post-Class-Questionnaire(Teachers)

Thank you for your interest in taking part in this study.

Please complete this questionnaire as soon as possible after this week's online teaching class.

The questionnaire should take about 2-3 minutes to complete.

Course code Please enter your Course Code:

Section 1:Webcam status This set of questions is about whether you and your students had your webcams on or off during this week's online session.

In this week's online session for (name of course), did you have your webcam on or off?

- On

- Off
- I can't remember

If In this week's online session for (course name), did you have your webcam on or off? = Of

Why did you leave it off? (select all that apply)

Privacy:

- I was concerned about my physical location being seen
- I was concerned if students made recordings or screenshots without my permission (e.g using their camera phone)

Security

- I do not know who can access recordings of online classes or where they are stored
- I am concerned that online classes might be hacked which will lead to disclosure of my personal information

Distraction

- It makes me focus on how I look instead of the course content
- It would distract with student

Practical

- It overloads the bandwidth I have

Any other reason, please explain briefly.....

If In this week's online session for (course name), did you have your webcam on or off? = On

Why did you turn your webcam on? (Select all that apply)

- It feel my students engage more with me
- I feel my students paid attention with me
- Any other reason, please explain briefly

D4: Consent form and questionnaire for the students and teachers in Arabic

استبيان قبل الدراسة (الطلاب)

مواقف الطلاب تجاه الخصوصية والأمان في التعليم عبر الإنترنت

شكراً لاهتمامك بالمشاركة في هذه الدراسة.

هذه الدراسة هي جزء من بحث الدكتوراه الخاص بي في جامعة يورك في المملكة المتحدة. حيث سيتم طلب منك (عبر بريدك الإلكتروني ba913@york.ac.uk إكمال عدد من الاستبيانات القصيرة. ستلقى بريداً إلكترونياً مني) الجامعي في كل مرة تحتاج فيها إلى إكمال استبيان.

استبيان قبل الدراسة: هذا هو الاستبيان الذي ستكمله اليوم. في هذا الاستبيان، سأطرح عليك أسئلة حول مخاوفك المتعلقة بالخصوصية والأمان وثقتك في مختلف جوانب التعلم عبر الإنترنت. يجب أن يستغرق هذا الاستبيان حوالي 10-5 دقائق لإكماله.

استبيان بعد الجلسة عبر الإنترنت: ستكمل هذا الاستبيان مرة واحدة في الأسبوع، بعد كل جلسة عبر الإنترنت في (اسم الدورة). سيكون استبيانًا قصيرًا حول سلوكياتك أثناء استخدام الكاميرا في الجلسة عبر الإنترنت التي حضرته للتو. يجب أن يستغرق هذا الاستبيان حوالي 2-3 دقائق لإكماله.

استبيان بعد الدراسة: هذا هو الاستبيان النهائي الذي ستكملة في نهاية الدراسة. سأطرح عليك أسئلة حول استخدام وسائل التواصل الاجتماعي، ومخاوفك المتعلقة بالخصوصية والأمان على وسائل التواصل الاجتماعي، وثقتك في التقنيات الرقمية بشكل عام. يجب أن يستغرق هذا الاستبيان حوالي 5-8 دقائق لإكماله.

جميع المشاركين الذين يكملون الدراسة سيدخلون في سحب على جوائز للفوز بواحدة من 10 قسائم هدايا من أمازون السعودية بقيمة 100 ريال سعودي لكل منها.

تمت مراجعة هذه الدراسة والموافقة عليها من قبل لجان الأخلاقيات في الجامعة السعودية الإلكترونية وجامعة يورك.

مشاركتك طوعية بالكامل، وأنت حر في الانسحاب في أي وقت دون الحاجة إلى تقديم سبب ودون أي عواقب سلبية. في بداية كل استبيان، سأطلب منك إدخال آخر أربعة أرقام من معرفك الجامعي. إذا كنت ترغب في الانسحاب في غضون فترة تصل إلى أسبوع بعد نهاية الدراسة، ما عليك سوى إرسال بريد إلكتروني لي بالأرقام الأربعة وسيتم حذف جميع بياناتك.

جميع المعلومات التي تقدمها ستكون سرية تمامًا ومجهولة الهوية، لذلك لن تكون محدداً في أي تقارير أو منشورات. البيانات الأصلية سيتم رؤيتها فقط من قبل، بسمة المخلد، ومشرفتي البروفيسورة هيلين بيري. لا توجد مخاطر أو فوائد معروفة للمشاركة في الاستبيان. الاستطلاع لا يتضمن تسجيل فيديو أو صوت. المعلومات التي تقدمها لن يتم مشاركتها مع المدرسين في دورتك ولن يكون لها تأثير على درجاتك في الدورة.

وفقاً لقانون حماية البيانات، جامعة يورك هي المتحكم في البيانات لهذا المشروع البحثي. هذا يعني أن الجامعة مسؤولة عن التأكد من أن معلوماتك الشخصية محفوظة بشكل آمن وسري ومجهول. كما ستضمن الجامعة أن المعلومات تُستخدم فقط بالطريقة التي تم إخبارك بها. سيتم تخزين المعلومات من هذه الدراسة على أنظمة التخزين السحابية التابعة لجامعة يورك.

حل التخزين السحابي للجامعة مقدم من جوجل، مما يعني أن البيانات يمكن أن تكون موجودة في أي من مراكز بيانات جوجل المنتشرة عالمياً. الجامعة لديها ترتيبات متوافقة مع حماية البيانات مع هذا المزود (انظر

<https://www.york.ac.uk/it-services/google/policy/privacy>).

سيتم الاحتفاظ GDPR الشخصية لأغراض البحث بموجب المادة 6 (1) (هـ) من اللائحة العامة لحماية البيانات (ب) بالبيانات حتى يتم اعتماد العلامات النهائية بشكل رسمي للمقرر. إذا كنت لديك مخاوف حول كيفية معالجة . إذا كنت قلقاً dataprotection@york.ac.uk، يرجى الاتصال بمسؤول حماية البيانات في الجامعة على بشأن الطريقة التي تعاملت بها الجامعة مع بياناتك الشخصية، لديك الحق في تقديم شكوى إلى مكتب مفوض لمزيد من المعلومات). www.ico.org.uk/concerns، انظر Tel: + 44 303 123 1113 (المعلومات)

الموافقة المستنيرة إذا كنت سعيداً بالمشاركة في الدراسة، يرجى قراءة وتأكيدها. إذا لم ترغب في المشاركة، ببساطة أغلق هذه النافذة ولن يتم تسجيل أي شيء.

أؤكد أنني قرأت وفهمت المعلومات التي تشرح هذه الدراسة وتداعيات المشاركة فيها.

أفهم أن مشاركتي طوعية وأني حر في الانسحاب في أي وقت دون أي عواقب سلبية. بالإضافة إلى ذلك، إذا لم أرغب في الإجابة على أي أسئلة، فأنا حر في ذلك. أفهم أنه إذا انسحبت بعد المشاركة في بعض أو كل الدراسة، يمكنني طلب حذف المعلومات التي قدمتها ولكن يجب علي القيام بذلك في غضون أسبوع واحد من نهاية الدراسة.

- أؤكد أنني على علم بمن يمكنني الاتصال به إذا رغبت في طلب حذف معلوماتي.
- أفهم أيضاً أن معلوماتي الشخصية سرية وأن بياناتي ستكون مجهولة الهوية. فقط بسمة المخلد ومشرفتها هيلين بيري سيكون لديهما الوصول إلى المعلومات بصيغتها الأصلية. أفهم أنني لن أكون محدداً أو محدداً في أي مواد متعلقة بالبحث.
- أفهم أنه لا توجد مخاطر معروفة للمشاركة في هذه الدراسة.

- أفهم طبيعة الدراسة وأنا سعيد بالمشاركة.

يرجى إدخال آخر أربعة أرقام من بطاقة تعريف الجامعة الخاصة بك، في حال رغبتك في الاتصال بالباحثين أو الانسحاب من الدراسة:

مجموعة البيانات هذه تتعلق بمخاوفك حول الخصوصية خلال جلسات التدريس عبر الإنترنت.

لكل بيان، يرجى اختيار مدى موافقتك أو عدم موافقتك عليه.

- عادة ما يزعجني عندما يُطلب مني تقديم معلومات شخصية خلال فصول التدريس عبر الإنترنت.
- أحياناً أفكر لبعض الوقت إذا طُلب مني تقديم معلومات شخصية خلال فصول التدريس عبر الإنترنت.
- يزعجني أن أقدم معلومات شخصية للعديد من الدورات المختلفة للتدريس عبر الإنترنت.
- يزعجني جمع الكثير من المعلومات الشخصية خلال دورات التدريس عبر الإنترنت.
- يجب على الجامعات ألا تستخدم المعلومات الشخصية للطلاب لأي أغراض أخرى ما لم يتم تفويضها من قبل الطالب نفسه.
- عندما يقدم الطلاب معلومات شخصية خلال جلسة التدريس عبر الإنترنت لغرض معين، يجب على الجامعة عدم استخدام المعلومات لأي غرض آخر.
- يجب على الجامعات ألا تبيع المعلومات الشخصية للطلاب إلى أي منظمة أخرى.
- يجب على الجامعات ألا تشارك المعلومات الشخصية للطلاب مع منظمات أخرى ما لم يتم تفويضها من قبل الطلاب.
- يجب على الجامعات تكريس المزيد من الوقت والجهد لمنع الوصول غير المصرح به إلى المعلومات الشخصية للطلاب.
- يجب على الجامعات منع الأشخاص غير المصرح لهم من الوصول إلى المعلومات الشخصية للطلاب دون النظر في التكلفة.
- يجب على الجامعات اتخاذ المزيد من الإجراءات لضمان عدم تمكن الأشخاص غير المصرح لهم من الوصول إلى المعلومات الشخصية للطلاب.
- أنا قلق من أن يستخدم طالب آخر معلوماتي الشخصية (مثل الصور الملتقطة للوجه) بدون إذني.
- أنا قلق من أن يتم تسريب معلوماتي الشخصية من قبل طالب آخر ضد إرادتي.
- أنا قلق بشأن تعرض معلوماتي الشخصية (مثل وجهي، اسمي، إلخ) على الإنترنت.
- لست مرتاحاً لمشاركة تفاصيل شخصية (مثل الصور، الاسم، إلخ) مع مشاركين آخرين في التدريس عبر الإنترنت.
- لست مرتاحاً لمشاركة موقعي الفعلي ومساحتي الشخصية (مثل غرفتي، مكاني، إلخ) مع مشاركين آخرين في فصول التدريس عبر الإنترنت.
- أنا قلق من أن يستخدم معلمي مساهماتي في الفصل عبر الإنترنت (مثل استخدام عملي كمثال) بدون إذني.
- أنا قلق من أن يستخدم زملائي في الفصل مساهماتي في الجلسة عبر الإنترنت (مثل الفكرة التي قدمتها في مناقشة جماعية عبر الإنترنت) بدون إذني.
- بشكل عام، أنا قلق بشأن معلوماتي الشخصية عند المشاركة في أنشطة الفصل عبر الإنترنت (مثل مناقشات المجموعة عبر الإنترنت).

مجموعة البيانات هذه تتعلق بمستوى ثقتك في نظام البلاكبورد

لكل بيان، يرجى اختيار مدى موافقتك أو عدم موافقتك عليه.

- يضمن البلاكبورد عدم الكشف عن هوية المستخدمين.
- في البلاكبورد يمكنني التعبير عن رأيي حول الدراسات والمواضيع والمعلمين دون أي خوف.
- يضمن البلاكبورد أمان بياناتي الشخصية

- البلاكبود فعال ويعمل دائمًا بشكل موثوق.
- البلاكبود يمكن التنبؤ به ولا يتغير.
- يمكنني الاعتماد على البلاكبود.

مجموعة البيانات هذه تتعلق بثقتك في جامعتك.

- لكل بيان، يرجى اختيار مدى موافقتك أو عدم موافقتك عليه.
- تهتم الجامعة السعودية الإلكترونية بطلابها.
- خريجو الجامعة السعودية الإلكترونية لا يواجهون مشكلة في العثور على وظيفة في تخصصهم.
- تحظى الجامعة السعودية الإلكترونية بتقدير من قبل أرباب العمل في سوق العمل.
- تطبق الجامعة السعودية الإلكترونية مبادئ الأخلاقيات والمسؤولية الاجتماعية في أنشطتها.
- توفر الجامعة السعودية الإلكترونية فرصًا لتطوير الطلاب الشخصي.
- تحظى الجامعة السعودية الإلكترونية باعتراف دولي.
- تستخدم الجامعة السعودية الإلكترونية التكنولوجيا الجديدة لتحسين دراسي واكتساب المعرفة والمهارات.

مجموعة البيانات هذه تتعلق بثقتك في معلم (اسم الدورة).

لكل بيان، يرجى اختيار مدى موافقتك أو عدم موافقتك عليه.

- يمكن وصف معلمي بأنه شخص يستمع لي بعناية.
- من المهم لمعلمي أن يفهم ما هي أهدافي التعليمية.
- معلمي يفهمني.
- معلمي يتقبلني كما أنا.
- معلمي حريص على عدم تجاهل مخاوفي.
- من الصعب على معلمي تقبل طبيعتي.
- معلمي يهتم بتعليمي.
- معلمي يهتم حقًا برفاهيتي التعليمية.
- معلمي ليس من النوع الذي يذهب بعيدًا ليظهر لي الرحمة.

مجموعة البيانات هذه تتعلق بثقتك في زملائك في دورة (اسم الدورة).

- لكل بيان، يرجى اختيار مدى موافقتك أو عدم موافقتك عليه.
- بشكل عام، الطلاب في فصلي لدورة (اسم الدورة) جديرون بالثقة.
- الطلاب في فصلي لدورة (اسم الدورة) ودودون.
- يمكنني الاعتماد على زملائي في دورة (اسم الدورة).
- أثق بأن زملائي في دورة (اسم الدورة) سيحافظون على سرية معلوماتي الشخصية.
- نحن عادةً نراعي مشاعر بعضنا البعض في هذه الدورة (اسم الدورة).

الديموغرافية

أخيرًا، هذه بعض الأسئلة عن نفسك. سيتم استخدامها فقط لأغراض إحصائية.

ما هو جنسك؟ • ذكر • أنثى

كم عمرك؟ (بالأقرب سنة)

ما هي جنسيتك؟ • سعودي • أخرى، يرجى التحديد

ما هو مستوى دراستك؟

ستبيان ما بعد الفصل (الطلاب)

يرجى إكمال هذا الاستبيان القصير في أسرع وقت ممكن بعد جلسة هذا الأسبوع لدورة (اسم الدورة) عبر الإنترنت.

يجب أن يستغرق الاستبيان حوالي 3 دقائق لإكماله.

شكراً لاهتمامك المستمر بالمشاركة في هذه الدراسة.

يرجى إدخال آخر أربعة أرقام من بطاقة تعريف الجامعة الخاصة بك:

مجموعة الأسئلة هذه تتعلق بما إذا كان المدرس، أنت، والطلاب الآخرون قد قاموا بتشغيل أو إيقاف الكاميرا في جلسة هذا الأسبوع عبر الإنترنت:

في جلسة هذا الأسبوع عبر الإنترنت لدورة (اسم الدورة)، هل قام المدرس بتشغيل الكاميرا الخاصة به أم إيقافها؟

تشغيل

إيقاف

لم ألاحظ

في جلسة هذا الأسبوع عبر الإنترنت لدورة (اسم الدورة)، هل قام أي من الطلاب الآخرين بتشغيل الكاميرا الخاصة بهم أم إيقافها؟

نعم

لا

لم ألاحظ

القسم الثاني: تصورات الطلاب حول استخدام الكاميرا

في جلسة هذا الأسبوع عبر الإنترنت لدورة (اسم الدورة)، هل قمت بتشغيل الكاميرا الخاصة بك أم إيقافها؟

تشغيل

إيقاف

لا أتذكر

عرض هذا السؤال: إذا كانت الإجابة "إيقاف" على السؤال السابق

لماذا تركتها مغلقة؟ (اختر كل ما ينطبق)

- كنت قلقاً بشأن رؤية موقعي الفعلي.
- كنت قلقاً إذا قام الطلاب الآخرون بتسجيل الفيديو أو التقاط لقطات شاشة بدون إذني (مثل استخدام كاميرا الهاتف).
- يجعلني أركز على مظهري بدلاً من محتوى الدورة.
- يمكن أن يشتت انتباه الطلاب الآخرين.
- لا أعرف من يمكنه الوصول إلى تسجيلات الجلسات عبر الإنترنت أو مكان تخزينها.
- قلق من أن الجلسات عبر الإنترنت قد تتعرض للاختراق مما يؤدي إلى الكشف عن معلوماتي الشخصية.
- يجعلني أقل مرونة في اختيار مكان حضور الجلسة (مثل الحضور من مقهى).
- يصعب علي الابتعاد عن الكمبيوتر.
- يصعب علي القيام بأنشطة أخرى خلال الجلسة.
- يزيد من استهلاك عرض النطاق الترددي المتاح لدي.

أي سبب آخر، يرجى التوضيح بإيجاز.

عرض هذا السؤال: إذا كانت الإجابة "تشغيل" على السؤال السابق

لماذا قمت بتشغيل الكاميرا الخاصة بك؟ (اختر كل ما ينطبق)

ساعديني في البقاء مركزًا.

جعلني أشعر بالمزيد من الانخراط.

كان المدرس قد شغل الكاميرا الخاصة به.

الطلاب الآخرون قاموا بتشغيل الكاميرات الخاصة بهم.

أي سبب آخر، يرجى التوضيح بإيجاز.

استبيان ما بعد الدراسة (الطلاب)

شكرًا مرة أخرى على اهتمامك بالمشاركة في هذه الدراسة.

هذا هو الاستبيان النهائي للدراسة ويجب أن يستغرق حوالي 5 دقائق لإكماله.

يرجى إدخال آخر أربعة أرقام من بطاقة تعريف الجامعة الخاصة بك:

المجموعة الأولى من الأسئلة تتعلق باستخدام مواقع التواصل الاجتماعي:

بمواقع التواصل الاجتماعي أعني المنصات مثل سناب شات، فيسبوك، إنستغرام، تويتر، لينكد إن، وواتساب، التي يستخدمها الناس للتواصل ومشاركة المعلومات والاهتمامات والهوايات مع الآخرين.

. هذه المجموعة من البيانات تتعلق بمخاوفك حول الخصوصية عند استخدام مواقع التواصل الاجتماعي. لكل 1 بيان، يرجى اختيار مدى موافقتك أو عدم موافقتك عليه.

- عادة ما يزعجني عندما تطلب مني مواقع التواصل الاجتماعي تقديم معلومات شخصية.
- أحيانًا أفكر لبعض الوقت عندما تطلب مني مواقع التواصل الاجتماعي تقديم معلومات شخصية.
- يزعجني تقديم معلومات شخصية للعديد من مواقع التواصل الاجتماعي.
- يزعجني أن مواقع التواصل الاجتماعي تجمع الكثير من المعلومات الشخصية.
- يجب على مواقع التواصل الاجتماعي ألا تستخدم المعلومات الشخصية للأفراد لأي أغراض أخرى ما لم يتم تفويضها من قبل الفرد.
- عندما يقدم الناس معلومات شخصية لموقع التواصل الاجتماعي لغرض معين، يجب على الموقع ألا يستخدم المعلومات لأي غرض آخر.
- يجب على مواقع التواصل الاجتماعي ألا تبيع المعلومات الشخصية للأفراد إلى أي منظمة أخرى.
- يجب على مواقع التواصل الاجتماعي ألا تشارك المعلومات الشخصية للأفراد مع منظمات أخرى ما لم يتم تفويضها من قبل الأفراد.
- يجب على مواقع التواصل الاجتماعي تكريس المزيد من الوقت والجهد لمنع الوصول غير المصرح به إلى المعلومات الشخصية للأفراد.
- يجب على مواقع التواصل الاجتماعي منع الأشخاص غير المصرح لهم من الوصول إلى المعلومات الشخصية للأفراد دون النظر في التكلفة.
- يجب على مواقع التواصل الاجتماعي اتخاذ المزيد من الإجراءات لضمان عدم تمكن الأشخاص غير المصرح لهم من استخدام أجهزة الكمبيوتر للوصول إلى المعلومات الشخصية للأفراد.
- أنا قلق من أن المشاركين على موقع التواصل الاجتماعي سيستخدمون معلوماتي الشخصية (مثل الصور الملتقطة للوجه، الاسم، إلخ) لأغراض أخرى بدون إذني.
- لست مرتاحًا لتوفر تفاصيل شخصية (مثل الصور، الاسم، إلخ) للمشاركين الآخرين على مواقع التواصل الاجتماعي.
- أنا قلق من أن يتم تسريب معلوماتي الشخصية من قبل المشاركين على موقع التواصل الاجتماعي ضد إرادتي.
- أنا قلق بشأن تعرض معلوماتي الشخصية (مثل وجهي، اسمي، إلخ) على الإنترنت.

المجموعة التالية من البيانات تتعلق بسلوكياتك فيما يتعلق بالأمان عبر الإنترنت. لكل بيان، يرجى تقييم مدى تكرارك لكل من هذه السلوكيات المتعلقة بالأمان على مقياس من "أبداً" إلى "دائماً".

- أضبط شاشة الكمبيوتر لتغلق تلقائياً إذا لم أستخدمها لفترة طويلة.
- أستخدم كلمة مرور/رمز مرور لفتح جهاز اللابتوب أو الجهاز اللوحي.
- أقوم بفتح شاشة الكمبيوتر يدوياً عندما أبتعد عنه.
- أستخدم رمز PIN أو رمز مرور لفتح هاتفي المحمول.
- لا أغير كلمات المرور الخاصة بي إلا إذا اضطررت لذلك.
- أستخدم كلمات مرور مختلفة للحسابات المختلفة التي أمتلكها.
- عندما أنشئ حساباً جديداً عبر الإنترنت، أحاول استخدام كلمة مرور تتجاوز متطلبات الموقع الأدنى.
- لا أضيف أحرفاً خاصة في كلمة المرور إذا لم يكن ذلك مطلوباً.
- عندما يرسل لي شخص ما رابطاً، أفتحه دون التحقق من مكانه أولاً.
- أعرف الموقع الذي أزوره بناءً على شكله ومظهره، بدلاً من النظر إلى شريط العنوان.
- أقدم المعلومات للمواقع دون التحقق أولاً من أنها ستُرسل بشكل آمن (مثل SSL، https://)، أيقونة القفل).
- عندما أتصفح المواقع، أقوم بتمرير المؤشر فوق الروابط لأرى إلى أين تذهب قبل النقر عليها.
- إذا اكتشفت مشكلة أمنية، أو اصل ما كنت أفعله لأنني أفترض أن شخصاً آخر سيقوم بإصلاحها
- عندما يُطلب مني تحديث البرامج، أقوم بتثبيتها على الفور.
- أحاول التأكد من أن البرامج التي أستخدمها محدثة.
- أتحقق من أن برنامج مكافحة الفيروسات يتم تحديثه بانتظام.

هذه المجموعة من البيانات تتعلق بثقتك في التكنولوجيا بشكل عام. لكل بيان، يرجى اختيار مدى موافقتك أو عدم موافقتك عليه.

- بفضل تكنولوجيا المعلومات والاتصالات، حياتنا أصبحت أسهل وأكثر راحة.
- بفضل تكنولوجيا المعلومات والاتصالات، حياتنا أصبحت أكثر أماناً.
- العلم والتكنولوجيا يجعلون حياتنا أفضل.
- العلم والتكنولوجيا يجعلون حياتنا أسهل.
- أعتقد أن التقنيات الجديدة تُنشأ من أجل الخير.

أستبيان ما قبل الدراسة (المعلمين)

المقدمة

مواقف المعلمين تجاه استخدام الكاميرات خلال الحصص الدراسية عبر الإنترنت. شكراً لاهتمامك بالمشاركة في هذه الدراسة.

هذه الدراسة جزء من بحث الدكتوراه الخاص بي في جامعة يورك. ستكون هذه الدراسة ميدانية لمدة أسبوعين حول مخاوفك المتعلقة بالخصوصية والأمان خلال جلسات التدريس عبر الإنترنت.

(إلى بريدك الجامعي في ba913@york.ac.uk سيُطلب منك إكمال استبيانين قصيرين. سأرسل لك بريداً إلكترونياً (من كل مرة تحتاج فيها إلى إكمال استبيان. تم وصف الاستبيانين أدناه.

استبيان ما قبل الدراسة:

هذا هو الاستبيان الذي ستكمله اليوم. سأطرح عليك أسئلة حول مواقفك تجاه استخدام الكاميرا خلال الجلسات. سيستغرق إكماله حوالي دقيقتين.

استبيان ما بعد الفصل:

ستكمل هذا الاستبيان بعد الحصص الدراسية عبر الإنترنت لمدة أسبوعين. سيسألك عن استخدامك للكاميرا خلال

الجلسات، أسباب اختيارك، ومدى وعيك بحالة الكاميرا لدى الطلاب في الجلسة. سيستغرق هذا الاستبيان حوالي 2-3 دقائق لإكماله.

مشاركتك في الدراسة اختيارية تمامًا، ويمكنك الانسحاب في أي وقت دون الحاجة إلى تقديم سبب ودون أي عواقب سلبية. في بداية الاستبيان، سيطلب منك إدخال رمز المقرر الدراسي الخاص بك. إذا كنت ترغب في الانسحاب خلال فترة تصل إلى أسبوع واحد بعد نهاية الدراسة، ببساطة أرسل لي بريدًا إلكترونيًا يحتوي على رمز المقرر وسيتم حذف جميع بياناتك.

جميع المعلومات التي تقدمها ستكون سرية تمامًا ومجهولة الهوية، لذلك لن تكون قابلاً للتحديد في أي تقارير أو منشورات، ولن يتم مشاركة المعلومات الفردية مع الجامعة. سيتم الاطلاع على البيانات الأصلية فقط من قبلي، بسمه المخلد، طالبة دكتوراه في قسم علوم الحاسوب بجامعة يورك، ومشرفتي البروفيسور هيلين بتري. لا توجد مخاطر أو فوائد معروفة من المشاركة في الاستبيان. الدراسة لا تشمل تسجيل الفيديو أو الصوت. لن تؤثر البيانات على درجات الطلاب في المقرر الدراسي، ولن تؤثر على تقييم أعضاء الهيئة التدريسية (مثل الترقيات أو المراجعات وما إلى ذلك).

(أو ba913@york.ac.uk إذا كان لديك أي أسئلة أو مخاوف بشأن الدراسة، يرجى الاتصال بي، بسمه المخلد)
(helen.petrie@york.ac.uk مشرفتي، البروفيسور هيلين بتري)

تمت مراجعة هذه الدراسة والموافقة عليها من قبل لجان الأخلاقيات في الجامعة السعودية الإلكترونية وجامعة يورك.

وفقًا لقانون حماية البيانات، فإن جامعة يورك هي مراقب البيانات لهذه الدراسة البحثية. هذا يعني أن الجامعة مسؤولة عن التأكد من أن معلوماتك الشخصية تُحفظ آمنة وسرية ومجهولة الهوية. كما ستضمن الجامعة أن يتم استخدام المعلومات بالطريقة التي تم إبلاغك بها. سيتم تخزين المعلومات من هذه الدراسة على أنظمة التخزين السحابية التابعة ، مما يعني أن البيانات يمكن أن تكون موجودة في أي Google لجامعة يورك. مزود التخزين السحابي للجامعة هو شركة المنتشرة عالميًا. لدى الجامعة ترتيبات متوافقة مع حماية البيانات مع هذا المزود Google من مراكز البيانات التابعة لـ (/). تعالج الجامعة البيانات <https://www.york.ac.uk/it-services/google/policy/privacy> (اطلع على). سيتم الاحتفاظ GDPR الشخصية لأغراض البحث وفقًا للمادة 6 (1) (هـ) من اللائحة العامة لحماية البيانات () بالبيانات حتى يتم اعتماد الدرجات النهائية للمقرر بشكل رسمي. إذا كانت لديك مخاوف حول كيفية معالجة . إذا كنت قلقًا dataprotection@york.ac.uk يرجى الاتصال بمسؤول حماية البيانات في الجامعة على بشأن الطريقة التي تعاملت بها الجامعة مع بياناتك الشخصية، لديك الحق في تقديم شكوى إلى مكتب مفوض لمزيد من المعلومات). www.ico.org.uk/concerns، انظر Tel: + 44 303 123 1113 المعلومات)

الموافقة المستنيرة

إذا كنت ترغب في المشاركة في الدراسة، يرجى قراءة وتأكد البنود أدناه. إذا كنت لا ترغب في المشاركة، ببساطة أغلق هذه النافذة ولن يتم تسجيل أي شيء.

أؤكد أنني قرأت وفهمت المعلومات التي تشرح هذه الدراسة وآثار المشاركة فيها.

أفهم أن مشاركتي طوعية وأني حر في الانسحاب في أي وقت دون أي عواقب سلبية. بالإضافة إلى ذلك، إذا لم أرغب في الإجابة على أي أسئلة، لدي الحرية في القيام بذلك. أفهم أنه إذا انسحبت بعد المشاركة في بعض أو كل الدراسة، يمكنني طلب حذف المعلومات التي قدمتها ولكن يجب علي القيام بذلك في غضون أسبوع واحد من نهاية الدراسة.

أؤكد أنني على علم بمن يجب الاتصال به إذا رغبت في طلب حذف معلوماتي.

أفهم أيضًا أن معلوماتي الشخصية سرية وأن بياناتي ستظل مجهولة الهوية. فقط بسمه المخلد ومشرفتها هيلين بتري ستمكنان من الوصول إلى المعلومات بصيغتها الأصلية.

أفهم أنه لن يتم التعرف عليّ أو أن أكون قابلاً للتحديد في أي مواد تتعلق بالبحث.

أفهم أنه لا توجد مخاطر معروفة من المشاركة في هذه الدراسة.

أفهم طبيعة الدراسة وأنا سعيد بالمشاركة.

رمز المقرر: يرجى إدخال رمز المقرر الخاص بك، في حالة رغبتك في التواصل مع الباحثين أو الانسحاب من الدراسة:

القسم الأول:

تتناول المجموعة الأولى من الأسئلة مواقف المعلمين تجاه استخدام الكاميرات خلال الحصص الدراسية عبر الإنترنت، وتجاربهم السابقة مع التدريس عبر الإنترنت، ومدى ارتياحهم لإظهار وجوههم أو محيطهم خلال الجلسات عبر الإنترنت.

ما هي المدة التي قمت بالتدريس باستخدام الطريقة المدمجة (أي مزيج من التدريس وجهاً لوجه وعبر الإنترنت)؟

- أقل من عام
- من سنة إلى 5 سنوات
- من 6 إلى 10 سنوات
- من 11 إلى 15 عامًا
- أكثر من 15 عامًا

كم مرة تقوم بتشغيل الكاميرا الخاصة بك خلال جلسات التدريس عبر الإنترنت؟ (يتم تصنيفها من 1 = أبدًا إلى 7 = دائمًا).

البيانات الديموغرافية

أخيرًا، هذه بعض الأسئلة عن نفسك. سيتم استخدامها فقط لأغراض إحصائية.

ما هو جنسك؟

- ذكر
- أنثى
- أفضل عدم القول

استبيان ما بعد الفصل (المعلمين)

شكرًا لاهتمامك بالمشاركة في هذه الدراسة. يرجى إكمال هذا الاستبيان في أقرب وقت ممكن بعد الحصة الدراسية عبر الإنترنت لهذا الأسبوع. سيستغرق إكمال الاستبيان حوالي 2-3 دقائق.

رمز المقرر:

يرجى إدخال رمز المقرر الخاص بك:

القسم الأول: حالة الكاميرا

تتناول هذه المجموعة من الأسئلة ما إذا كانت كاميراتك وكاميرات الطلاب في وضع التشغيل أو الإيقاف خلال الجلسة عبر الإنترنت لهذا الأسبوع.

في جلسة هذا الأسبوع عبر الإنترنت لمقرر (اسم المقرر)، هل كانت الكاميرا الخاصة بك في وضع التشغيل أم الإيقاف؟

- تشغيل
- إيقاف
- لا أتذكر

عرض هذا السؤال:

إذا كان جواب السؤال "في جلسة هذا الأسبوع عبر الإنترنت لمقرر (اسم المقرر)، هل كانت الكاميرا الخاصة بك في وضع التشغيل أم الإيقاف؟" = إيقاف

لماذا تركت الكاميرا مغلقة؟ (اختر كل ما ينطبق)

- كنت قلقًا بشأن رؤية موقعي الفعلي
- كنت قلقًا من أن يقوم الطلاب بتسجيلات أو لقطات شاشة دون إذني (مثل استخدام كاميرا هواتفهم)
- لا أعرف من يمكنه الوصول إلى تسجيلات الجلسات عبر الإنترنت أو أين يتم تخزينها
- أشعر بالقلق من احتمالية اختراق الجلسات عبر الإنترنت مما يؤدي إلى كشف معلوماتي الشخصية
- يجعلني أركز على مظهري بدلاً من محتوى المقرر
- يشكل تشتيتًا للطلاب

- يؤدي إلى استهلاك عرض النطاق الترددي المتاح لدي
- سبب آخر، يرجى التوضيح باختصار.....

عرض هذا السؤال:

- إذا كان جواب السؤال "في جلسة هذا الأسبوع عبر الإنترنت لمقرر (اسم المقرر)، هل كانت الكاميرا الخاصة بك في وضع التشغيل أم الإيقاف؟" = تشغيل
- لماذا قمت بتشغيل الكاميرا الخاصة بك؟ (اختر كل ما ينطبق)
- أشعر أن طلابي يتفاعلون معي أكثر
 - أشعر أن طلابي يركزون معي بشكل أكبر
 - سبب آخر، يرجى التوضيح باختصار....

Appendix E: Consent Forms and Questionnaires for Studies 6 and 7

E1: Consent form and questionnaire for the KSA participants

استخدام المعلمين للكاميرا في الجلسات عبر الإنترنت

المقدمة

تصورات المعلمين في مؤسسات التعليم العالي حول استخدام الكاميرات في التدريس عبر الإنترنت قبل وأثناء ومنذ جائحة كورونا

شكراً لاهتمامك بالمشاركة في هذا الاستبيان.

هذا الاستبيان جزء من بحث الدكتوراه الخاص بي في جامعة يورك. أنا مهتم بجمع معلومات حول تجاربك وآرائك بشأن استخدام الكاميرات في التدريس عبر الإنترنت (قبل وأثناء ومنذ الجائحة)، بما في ذلك أي مخاوف تتعلق بالخصوصية والأمان المتعلقة باستخدام الكاميرات في التدريس عبر الإنترنت.

للمشاركة في هذا الاستبيان، يجب أن تكون:

- فوق سن 18 عامًا
 - تعمل كمعلم (سواء بدوام كامل أو جزئي) في مؤسسة تعليم عالٍ في المملكة المتحدة
- مشاركتك في الاستبيان طوعية، ويمكنك الانسحاب في أي وقت دون أي عواقب سلبية. في بداية الاستبيان، سيتم إعطاؤك رمزًا فريدًا؛ إذا كنت ترغب في الانسحاب حتى أسبوع بعد المشاركة، فقط أرسل لي بريدًا إلكترونيًا يحتوي على رمزك وسيتم حذف جميع بياناتك.

يجب أن يستغرق إكمال الاستبيان حوالي 10 دقيقة.

الموافقة

إذا كنت سعيديًا بالمشاركة، يرجى تأكيد العبارات أدناه. إذا كنت لا ترغب في المشاركة، ببساطة أغلق هذه النافذة.

- أؤكد أنني قرأت وفهمت المعلومات التي تشرح هذا الاستبيان.
- أفهم أن مشاركتي طوعية، وأني حر في الانسحاب في أي وقت دون عواقب سلبية.
- أفهم من يمكنني الاتصال به إذا كنت أرغب في طلب حذف معلوماتي.
- أفهم أن معلوماتي الشخصية سرية وستظل مجهولة الهوية.
- أفهم أنه لا توجد مخاطر معروفة للمشاركة في هذا الاستبيان.
- أوافق على المشاركة في هذا الاستبيان.

القسم الأول: ممارسات التدريس الشخصية للمعلمين قبل الجائحة

1. هل كنت في وظيفة تدريسية قبل بدء الجائحة؟
 - نعم
 - لا
2. قبل الجائحة، هل كانت لديك أي خبرة في التدريس عبر الإنترنت؟
 - لا شيء على الإطلاق إلى خبرة كبيرة
3. قبل الجائحة، كم مرة قمت بتشغيل الكاميرا أثناء الأنشطة التالية للتدريس عبر الإنترنت؟
 - المحاضرات الحية
 - المناقشات الجماعية الصغيرة / الندوات
 - الجلسات العملية والمخبرية
 - الجلسات الفردية مع الطلاب
4. قبل الجائحة، هل كانت لديك أي مخاوف بشأن خصوصيتك وأمانك أثناء التدريس عبر الإنترنت؟
 - لا شيء على الإطلاق إلى قدر كبير
5. هل ترغب في توضيح سبب إعطائك لهذا التقييم؟

القسم الثاني: ممارسات التدريس الشخصية لأعضاء هيئة التدريس خلال ومنذ الجائحة

1. خلال ومنذ الجائحة، هل قمت بالتدريس عبر الإنترنت؟
 - لا شيء على الإطلاق إلى قدر كبير
2. خلال ومنذ الجائحة، كم مرة قمت بتشغيل الكاميرا أثناء الأنشطة التالية للتدريس عبر الإنترنت؟
 - المحاضرات الحية
 - المناقشات الجماعية الصغيرة / الندوات
 - الجلسات العملية والمخبرية
 - الجلسات الفردية مع الطلاب
3. خلال ومنذ الجائحة، هل كانت لديك أي مخاوف بشأن خصوصيتك وأمانك أثناء التدريس عبر الإنترنت؟
 - لا شيء على الإطلاق إلى قدر كبير
4. هل ترغب في توضيح سبب إعطائك لهذا التقييم؟

5. هل تتخذ أي احتياطات للحفاظ على خصوصيتك وأمانك عبر الإنترنت أثناء الأنشطة التدريسية عبر الإنترنت؟

○ لا شيء على الإطلاق إلى قدر كبير

6. هل ترغب في توضيح هذه الاحتياطات بإيجاز؟

[هل هناك أي شيء بشأن تشغيل الكاميرا أثناء الأنشطة التدريسية عبر الإنترنت يجعلك تشعر بعدم الارتياح؟

○ نعم

○ لا

7. هل ترغب في توضيح ما يجعلك تشعر بعدم الارتياح بشأن تشغيل الكاميرا أثناء التدريس عبر الإنترنت؟

القسم الثالث: وجهات نظر المعلمين حول استخدام الكاميرا

1. كيف تشعر أن استخدام الكاميرا في التدريس عبر الإنترنت يؤثر عليك كمعلم؟

2. إلى أي مدى تتفق أو تختلف مع العبارات التالية فيما يتعلق بتأثير استخدام الكاميرا عليك كمعلم؟

○ تشغيل الطلاب لكاميراتهم يؤثر إيجابيًا على قدرتي على تقييم فهمهم ومشاركتهم.

○ من الأسهل التفاعل مع الطلاب الذين لديهم كاميراتهم مشغلة.

○ استخدام الطلاب للكاميرات يعزز ديناميكية الفصل الدراسي عبر الإنترنت بشكل عام.

3. كيف تعتقد أن تشغيلك أو إيقافك للكاميرا يؤثر على تجربة الطلاب؟

القسم الرابع: أسئلة عامة حول مخاوف الخصوصية والأمان في التدريس عبر الإنترنت

1. هل لدى مؤسستك سياسة حول ما إذا كان يجب على المعلمين تشغيل كاميراتهم أثناء التدريس عبر الإنترنت؟

○ نعم

○ لا

○ غير متأكد

2. هل تعتقد أنه يجب على المعلمين تشغيل كاميراتهم أثناء جلسات التدريس عبر الإنترنت؟

○ نعم

○ لا

○ غير متأكد

3. هل ترغب في توضيح سبب اعتقادك بذلك؟

4. هل سبق لك أن واجهت أي خروقات للخصوصية أو الأمان أثناء جلسات التدريس عبر الإنترنت؟

○ نعم، أكثر من مرة

○ نعم، مرة واحدة فقط

○ لا

5. ما نوع الخروقات التي واجهتها، وكيف تعاملت معها؟

القسم الخامس: المعلومات الديموغرافية

1. ما هو جنسك؟

○ ذكر

○ أنثى

- أفضل عدم القول
- 2. كم عمرك؟
- 3. ما هو أعلى مستوى تعليمي حصلت عليه؟
 - درجة البكالوريوس
 - درجة الماجستير
 - درجة الدكتوراه
 - أخرى
- 4. ما هي المواد التي تقوم بتدريسها؟
- 5. ما هو الاسم الكامل لمؤسستك التعليمية؟ (سيُستخدم هذا فقط للتحقق من حجم المؤسسة ونوعها، ولن يتم نشره في أي مكان).

E2: Consent form and questionnaire for the UK participants

HEI Teachers' Perceptions of Webcam Use in Online Teaching Before, During, and Since the Pandemic

Thank you for your interest in taking part in this survey.

This survey is part of my PhD research at the University of York. I am interested in gathering information about your experiences and views on the use of webcams in online teaching (before, during, and since the pandemic), including any privacy and security concerns related to webcam use in online teaching.

To participate, you need to be:

- Over the age of 18
- Teaching (either full-time or part-time) at a higher education institution in the UK

Your participation is voluntary, and you can withdraw at any time without negative consequences. At the beginning of the questionnaire, you will be given a unique code; if you wish to withdraw up to one week after participating, simply email me with your code, and all your data will be deleted.

The questionnaire should take about 10 minutes to complete.

Consent

If you are happy to participate, please confirm the statements below. If you do not wish to participate, simply close this window.

- I confirm I have read and understood the information explaining this questionnaire.

- I understand my participation is voluntary, and I am free to withdraw at any time without negative consequences.
- I understand who to contact if I wish to request my information be deleted.
- I understand my personal information is confidential and will be anonymised.
- I understand there are no known risks to participating in this questionnaire.
- I agree to participate in this questionnaire.

Section 1: Teachers personal teaching practice before the pandemic

1. Were you in a teaching post before the pandemic started?
 - Yes
 - No
2. Before the pandemic, did you have any experience teaching online?
 - None at all to A great deal
3. Before the pandemic, how often did you turn on your webcam during the following online teaching activities?
 - Live lectures
 - Small group discussions/seminars
 - Lab and practical sessions
 - One-to-one sessions with students
4. Before the pandemic, did you have any concerns about your own privacy and security during online teaching?
 - None at all to A great deal
5. Would you like to explain why you gave that rating?

Section 2: Faculty Members' Personal Teaching Practice During and Since the Pandemic

1. During and since the pandemic, have you taught online?
 - Not at all to A great deal
2. During and since the pandemic, how often have you turned your webcam on during the following online teaching activities?
 - Live lectures
 - Small group discussions/seminars
 - Lab and practical sessions
 - One-to-one sessions with students
3. During and since the pandemic, do you have any concerns about your privacy and security during online teaching?
 - None at all to A great deal

4. Would you like to explain why you gave that rating?
5. Do you take any precautions to preserve your online privacy and security during online teaching activities?
 - None at all to A great deal
6. Would you like to briefly explain those precautions?

Section 3: Teachers perspectives on webcam use

1. How do you feel using a webcam in online teaching affects you as a teacher?
2. To what extent do you agree or disagree with the following statements regarding the impact of webcam use on you as a teacher?
 - Students having their webcams on positively impacts my ability to gauge their understanding and participation.
 - It is easier to engage with students who have their webcams turned on.
 - Students' use of webcams enhances the overall online class dynamic.
3. How do you think having your webcam on or off affects the students' experience?
4. How does whether students have their webcams on or off affect you as a teacher?
5. In a teaching situation where some students have their webcams on and some have them off, to what extent do you agree or disagree with the following statements?
 - Having some students' webcams on enhances all students' participation and interaction.
 - Students are more attentive when some of their webcams are on.
 - Students learn better when some webcams are on.
 - Webcam use by some students promotes better teamwork and learning.
 - Webcam use contributes to a positive and inclusive teaching environment.

Section 4: General questions about privacy and security concerns in online teaching

1. Does your institution have a policy about whether teachers should have their webcams on during online teaching?
 - Yes
 - No
 - Not sure
2. Do you think teachers should have their webcams on during online teaching sessions?
 - Yes
 - No
 - Not sure
3. Would you like to explain why you hold this opinion?

4. To what extent do you agree or disagree with these statements about your institution's guidance on privacy:
 - My institution provides adequate guidance and resources to teachers about protecting their privacy and security during online teaching.
5. Have you ever experienced any privacy and security breaches during online teaching sessions?
 - Yes, more than once
 - Yes, only once
 - No
6. What kind of breaches did you experience, and how did you handle them?

Section 5: Demographics

1. What is your gender?
 - Male
 - Female
 - Non-binary
 - Prefer to self
 - Prefer not to say
2. How old are you?
3. What is your highest level of education?
 - Bachelor's degree
 - Master's degree
 - Doctorate
 - Other
4. What subject(s) do you teach?

What is the full name of your institution (this will only be used to check the size and type of institution, it will not be published anywhere)

