Student Webcam Use and Its Impacts on Teacher Self-Efficacy, Engagement, and Well-Being: A Literature Review

by

Melanie E. Lee

A Project submitted to the

School of Graduate and Postdoctoral Studies in partial

fulfillment of the requirements for the degree of

Master of Arts in Education Technologies

School of Graduate and Postdoctoral Studies

University of Ontario Institute of Technology (Ontario Tech University)

Oshawa, Ontario, Canada

November 2022

Student Webcam Use and Its Impacts on Teacher Self-Efficacy, Engagement, and Well-Being: A Literature Review

The Project was approved on November 1, 2022, by the following review committee:

Review Committee:

Research Supervisor	Dr. Jennifer Laffier
Second Reader	Dr. Janette Hughes

The above review committee determined that the Project Literature Review is acceptable in form and content and that a satisfactory knowledge of the field was covered by the work submitted. A copy of the Certificate of Approval is available from the School of Graduate and Postdoctoral Studies.

Abstract

Due to the COVID-19 pandemic lockdowns in March 2020, higher education institutions around the globe had to quickly pivot online. Since then, many schools have relied on video conferencing platforms equipped with webcams to help teachers and students stay virtually connected during synchronous classes. However, an ongoing trend has emerged in which students are not using their webcams during their online classes even though teachers wish them to do so. Thus, the following literature review investigated the reasons for student webcam use and non-use, as well as the impacts of this use and non-use on teachers' well-being, self-efficacy, and engagement. Overall findings, gathered between 2020 and 2022, revealed that a lack of student webcam use can negatively impact teachers' self-efficacy, engagement, and well-being. Implications and theory are discussed, which provide a framework for further analysis of the disconnect between students' intentions and teachers' expectations for webcam use in synchronous learning.

Keywords: online synchronous learning; teacher self-efficacy; student webcam use; well-being; work engagement

Author's Declaration

I hereby declare that this project consists of original work which I have authored. This is a true copy of the work, including any required final revisions, as accepted by my committee.

I authorize the University of Ontario Institute of Technology (Ontario Tech University) to lend this work to other institutions or individuals for the purpose of scholarly research. I further authorize the University of Ontario Institute of Technology (Ontario Tech University) to reproduce this work by photocopying or by other means, in total or in part, at the request of other institutions or individuals for the purpose of scholarly research. I understand that my work may be made electronically available to the public.

Melanie E. Lee   YOUR NAME

_____

Acknowledgments

Several individuals were instrumental in bringing this project to fruition. First, I want to extend my appreciation to my supervisor, Dr. Jennifer Laffier, for her extensive contributions and insight throughout the process. Thank you to all my professors at Ontario Tech University and especially Dr. Diana Petrarca, a true leader who sparked my curiosity and passion for learning and gave me the courage to take my next step. Thanks to Tessa Troughton, who helped me get unstuck from the muck along the way and appreciate the value of the birds-eye view. Also, thank you to my favourite student, Lucy, who taught me how to be a student again, along with the mighty powers of colour coding. And finally, I want to give special acknowledgment to my family for their unwavering encouragement and support to return to school after so many years. I would never have accomplished this without you.

Table of Contents

List of Tables

List of Figures

CHAPTER 1

List of Abbreviations

HE   higher education

TSE   teacher self-efficacy

WVC   web video conferencing

Chapter 1. Introduction

1.1   The Shift to Online Learning

The unprecedented shift online in 2020 due to COVID-19 lockdowns transformed the world of education. This global health emergency (World Health Organization, 2020) resulted in measures aimed at curbing the spread of coronavirus, including social distancing and the closure of schools and businesses (Adedoyin & Soykan, 2020). As a result, many of the activities that people engaged in before public health mandates came into effect now needed to be performed online. Hence, the urgent and short-term goal was for individuals to virtually connect so they could continue to socialize, work, or study as safely as possible and with the fewest disruptions (Ahmad et al., 2020). This led to an overnight surge in web video conferencing (WVC) platforms, such as Zoom, Google Classroom, Adobe Connect, Microsoft Teams, and Skype, making them vital tools in social, professional, and educational spheres (Bond et al., 2021; Dennen et al., 2021).

In the world of higher education, the shift to online learning also required teachers and students to rely on various WVCs to continue running classes. While some students embraced using their cameras in class, other students did not. For teachers, this may have been a struggle to teach online and not see their students. As a result, there are potential implications for the well-being, engagement, and self-efficacy of teachers.

1.1.1   Background

Online learning can be defined in numerous ways, but on a basic level, it is learning which is mediated by the Internet (Rapanta et al., 2020). It has also been referred to as distance education, remote teaching, and learning, or emergency online education (Adedoyin & Soykan, 2020) but is considered to be more specific than terms such as eLearning or digital education (Rapanta et al., 2020). Furthermore, online learning can include any type of teaching and learning environment where: (1) teachers or tutors are not in the same location as the student, (2) teachers or tutors post and

students access learning materials through some form of technology, (3) teachers or tutors interact with students using technology and (4) students are provided with online support (Anderson, 2011). In fact, the online classroom shares similarities with teaching and learning in the traditional classroom in that both environments include a wide range of pedagogical approaches, digital support, and education technology tools (Anderson, 2011).

These tools allow teachers and students to teach and study from a distance, either asynchronously, synchronously, or a combination of both. With asynchronous learning, a high degree of autonomy is afforded to students as course content is mainly completed independently by learners and not necessarily at the same time as others in the same class (Rapanta et al., 2020). In contrast, synchronous learning involves live, multi-directional communication amongst participants (Döring et al., 2022) through the use of audio, video, and writing tools found in WVC technology. To utilize both the audio and video capabilities during synchronous classes in a gallery view and without delays, participants may require a high-speed internet connection with at least 10 Mbps download speed per person (Armstrong, 2022). However, along with additional participants, opened windows, screen sharing, or video streaming, bandwidth requirements naturally increase as well (Zoom Video Communications, 2022). Since WVC enables participants to see and hear one another, this type of exchange has the potential to emulate an in-person learning experience. Thus, the aim of using WVC platforms in higher education (HE) is to create an online learning environment that establishes presence, fosters social cohesion, and encourages collaboration among participants.

Among the major WVC platforms, Zoom has been considered by many to be the leading tool due to its ease of use, reliability, and free access (Bailenson, 2021). However, its widespread and overwhelming pervasiveness in such a short amount of time was

unheard of prior to the pandemic (Eydman, 2018). In fact, according to Zoom data metrics, daily meeting minutes increased from 101 billion in January 2020 to 2.6 trillion in April 2020, demonstrating a huge leap in only three months (Dean, 2022). With a look at Rogers' theory of Diffusion of Innovations (1962), only innovators (2.5%) and early adopters (13.5%) tend to be open to trying out new technology. However, for schools, the rush for a viable and quick solution made the sudden pivot online paramount, yet these types of drastic changes within education typically take years (Adedoyin & Soykan, 2020). Therefore, without the usual time, due processes, or calculated planning needed for such a massive transition, problems can ultimately arise.

Furthermore, the Technology Acceptance Model (Davis, 1989) can also shed light on the possible challenges that might arise for teachers and students. To illustrate, the more an individual perceives a technological tool to be both useful and easy to use, the greater the likelihood they will ultimately accept and use it (Davis, 1989). Nevertheless, it can be argued that at the start of the pandemic, many teachers and students had very little choice but to adopt their new Zoom reality, regardless of their perceptions of its usefulness or ease of use. While WVC tools have been indispensable throughout the pandemic, the underlying intentions for using this new technology may vary greatly. Consequently, if individuals lack the choice, motivation, or time to embrace a new technological tool such as Zoom, it may impact their overall attitude toward using the technology.

1.1.2   *Well-Being Impacts of Online Learning*

Over the years, attitudes toward online learning have been mixed. It was once predicted that as internet accessibility and technological innovation increased, so would the motivation for online learning (Tallent-Runnels et al., 2006). Before the pandemic, even though e-learning had been gaining momentum in HE, it was not necessarily considered to be a substantive replacement for in-person learning (Adedoyin & Soykan,

2020) due to its inferior quality to the traditional classroom (Ribeiro, 2020). Similarly, Joshi et al. (2020) claimed that the achievements of online learning were debatable as it could not provide the same type of authentic face-to-face interactions as the traditional classroom. However, many have appreciated the flexible scheduling, time, and money saved on traveling to and from school, as well as the means to stay safe during a pandemic (Hosszu et al., 2021). Others have enjoyed escaping the hustle and bustle of life and even the social interactions of school (Burns et al., 2020; Villani et al., 2021).

On the other hand, reports began to emerge in 2020 of the possible mental health-related issues for teachers. In fact, studies conducted in the first year of the pandemic revealed increased mental health issues among teachers who reported feeling emotionally and cognitively drained (Mheidly et al., 2020; Obrad, 2020). The changes dictated by the spread of COVID-19 have been difficult for many professions, but it can be argued that teachers were among the most negatively affected (Murphy, 2020). Not only were they dealing with the isolation and ongoing challenges from the pandemic, but they were also shouldering the added stressors of working from home. Professionally, teachers were expected to adopt a completely new teaching modality overnight, in addition to all the administrative duties required to manage their online courses. Without the organizational support necessary to handle such an online working environment, a teacher's perceived feelings of isolation, underappreciation, job satisfaction, and technostress can increase (Chaney, 2016; Cross & Polk, 2018; Fernández-Batanero et al., 2021; Mheidly et al., 2020; Obrad, 2020). These factors may also impact teacher wellness and even lead to burnout (Mheidly et al., 2020; Obrad, 2020; Sokal et al., 2020). Moreover, when teachers expend high work effort but perceive to be under-rewarded, it has been found to impact their subjective well-being and increase their risk of cardiovascular health and mild psychiatric disorders (Van Vegchel, N., 2005). Ultimately, when faced with such adversities, if teachers do not have the self-

efficacy, engagement, or support to manage, it may have greater ramifications for their overall well-being.

Along with the mental health challenges teachers experienced transitioning online, there were also reports related to the negative effects of WVC on its users. First, Bailenson (2021) hypothesized that WVC could lead to additional psychological consequences stemming from a new phenomenon called Zoom fatigue. He also claimed that since Zoom's main technological design relied on video webcams, it was flawed. More specifically, it could lead to non-verbal overload as it included "excessive amounts of close-up eye gaze, cognitive load, increased self-evaluation from staring at video of oneself, and constraints on physical mobility" (para. 4). Therefore, Bailenson (2021) concluded that Zoom fatigue stemmed from the fundamental differences between in-person and online interactions. Others voiced similar concerns about the effects of WVC tools, such as webcams. For instance, in addition to the fatigue experienced from WVC, the visual effects of participants, their backgrounds, and technology essentially being "flattened" into a "third skin" increased users' cognitive overload (Nadler, 2020, p.1). Additional problems such as WiFi internet connectivity issues or WVC platform performance could further compound one's stress (Nadler, 2020). Similarly, even millisecond delays in audio were found to have negative effects on interpersonal relationships, regardless of whether participants were experiencing technical or internet issues (Lee, 2021). There were also claims that Zoom fatigue could have a greater effect on extroverts since they usually excelled at interpreting non-verbal cues in face-to-face interactions, yet WVC limited their abilities to do so (McConnon, 2021). Also, being muted by hosts made it less satisfying for extroverts while introverts tended to have privacy issues with webcams on (McConnon, 2021). Furthermore, it was speculated that women were more likely to experience greater Zoom fatigue and that one's race, age, and personality were all factors related to fatigue (Fauville et al., 2021). Additionally, the

tendency to multitask during virtual meetings could be cognitively draining, resulting in increased overall fatigue levels (Lee, 2020). Ultimately, despite the goal of WVC to emulate authentic conversations and fill the void of physical distance, Bailenson (2021) claimed it could not replace the rich and multi-layered exchanges that occurred in person (Bailenson, 2021). Thus, recent literature has not only revealed the limitations of WVC but its potential for various psychological impacts as well.

On the opposite side of the spectrum, how can online communication be affected when participants do not use their webcams? Such a WVC trend began to emerge in HE at the start of the pandemic when most students were not using their webcams during synchronous lessons (Bedenlier et al., 2020; Castelli & Sarvary, 2021). This may pose a problem since, from a pedagogical perspective, many teachers desire students to use their cameras (Peper et al., 2021). It also indicates a potential disconnect between students' preferences to not use their webcams and teachers' expectations in relation to webcam use in an online environment. While educators and teachers had the initial discussion of mandating webcams, early reports revealed that this could add additional stress to students during the pandemic. For example, Costa (2020), a trauma and online learning expert, emphasized that constantly staring at oneself on screen could have a harmful effect on mental health, especially for females with previous trauma. Furthermore, Aboagye et al. (2021) explored the various obstacles HE students faced in online learning since the start of the pandemic and uncovered that accessibility issues were at the forefront. Similarly, Di Pietro et al. (2020) argued that forcing students to use their webcams could negatively impact already marginalized groups. Therefore, if teachers lack an awareness of the potential impact webcams can have on their students or the underlying reasons for non-webcam use, it may widen the divide between them and their students. Equally important, it can lead to deeper issues with student

engagement and detract from the overall digital classroom experience for both students and teachers.

In fact, there have been reports that less webcam use in the classroom may impact student learning. A systematic literature review that examined student learning progress over the first year of the pandemic found evidence of learning loss in participants in a majority of the studies (Donnelly et al., 2021). There were also reports of fewer students completing online assignments or even joining their virtual classrooms (Cerveny, 2021), and others admitted they felt learning online was less effective than learning in person (Serhan, 2020; Tartavulea et al., 2020). Another study concluded that a lack of student engagement online was the most significant predictor of teacher stress, which lowered the quality of teacher instruction (Cerveny, 2021). Naturally, for teachers to successfully enhance student learning, they must also improve students' engagement, address their emotional needs, and facilitate their ability to collaborate with others (Rapanta et al., 2020), but without webcams, it is very difficult for teachers to achieve these pedagogical goals. Admittedly, pinpointing the exact source of students' disengagement during synchronous classes may be complicated, but if their non-webcam use is due to their lack of engagement, further investigation is warranted.

In addition to the implications for students, a lack of webcam use may also impact teachers, especially in the areas of self-efficacy, engagement, and satisfaction with teaching online. For many teachers, the sudden shift online necessitated fundamental changes to their profession (Bond et al., 2021). One of the biggest differences between the traditional classroom and the online learning environment is the nature of communication, collaboration, and interaction (Rapanta et al., 2020). When teachers are conversing with students in person, they tend to have better access to their students' non-verbal communication, such as inquisitive facial expressions, head nods, or shoulder shrugs. As a result, teachers are better able to gauge students' involvement and

comprehension levels throughout the learning process, which allows them to know when to adjust their approach accordingly (Castelli & Sarvary, 2021). Thus, TSE and confidence can ultimately be influenced by how successful they perceive their students to be in class. However, if students do not turn on their webcams, a teacher's ability to have fluid and natural interactions becomes even more of a challenge. As well, when teachers cannot see their students or are unable to assess their learning and engagement while teaching, it may further diminish their self-esteem, TSE, or work engagement (Huang et al., 2022). In fact, lower TSE has been found to positively correlate with emotional exhaustion (Skaalvik & Skaalvik, 2014). All in all, it is crucial for teachers to feel efficacious in their jobs, but without the aid of students' non-verbal communication, this may be difficult to achieve.

1.1.3   *The Role of Non-verbal Communication*

Based on Mehrabian's 7-38-55 Communication Model (1967), words make up 7% of one's message, vocalics account for 38%, and the remaining 55% stem from one's non-verbal communication, including body language and facial expressions. Granted, this model may only be based on a rough estimate, but it demonstrates the complexities of how verbal and non-verbal communication work together in both relaying and receiving one's message. With face-to-face interactions, it can be argued that these elements of spoken language are often automatic and even unintentional. Indeed, these paralinguistic features that are fundamentally built into the way people communicate with one another are often taken for granted. In an online environment in which participants have their webcams turned off, applying Mehrabian's 7-38-55 model would mean that more than half the message is missing. Therefore, the presence or absence of non-verbal communication in an online learning environment highlights its potential to either foster connections or drive disconnections between teachers and students.

Furthermore, it is important to note that communication refers not only to the simple act of speaking and listening; rather, it encapsulates how words are uttered by a speaker, how specific behaviours or actions are combined with these words, and how these often multi-layered and nuanced messages are received by others. Non-verbal communication can include facial expressions and eye movement, as well as body language, such as posture and gestures. Paralanguage, such as volume, prosody, intonation, and pitch provide additional layers of rich meaning to speech (Prifti, 2020). When both paralanguage and non-verbal communication are combined, they are known as paralinguistics (Prifti, 2020), and intertwining them with words can create numerous variations of rich and subtle meanings and emotional expressions. It can also be argued that non-verbal communication helps conversations flow more fluidly and naturally, both with expression and comprehension, as it contributes to a completer and more holistic message overall (Wahyuni, 2017). Therefore, in an online environment, teachers' non-verbal communication can help students understand and consolidate learning material (Wahyuni, 2017). In turn, students' non-verbal communication aids teachers in discerning students' attention, emotional engagement, and comprehension levels (Huang et al., 2022). However, body language and eye contact are not always clearly visible online (Zeng et al., 2020), and when webcams are turned off, this can invariably impede the overall flow of communication between participants (Cooper, 2020; Hosszu et al., 2021). Consequently, without webcams, regardless of whether a speaker's vocalics are present through audio capabilities, a lack of non-verbal cues can lead to communication barriers and strained relationship-building among participants.

All in all, it can be argued that the fundamental differences between in-person and online learning, with or without webcams, pose various challenges for teachers in humanizing the online classroom experience. Moreover, a lack of webcams during synchronous classes essentially removes a teacher's ability to effectively meet the needs

of their students. These issues can be further magnified by a lack of TSE to manage the transition from one teaching modality to another, especially if teachers are unaware of or misunderstand students' non-webcam use. Consequently, webcam use may be met with ongoing resistance by students due to dissatisfaction with their online experience, resulting in lower TSE, engagement, and well-being.

1.2 Research Problem

The current pandemic has shifted the dynamic of learning, and social interactions between teachers and students have been fundamentally transformed. For many, this change may have occurred too quickly, but digitizing the classroom was inevitable, and the e-learning industry is here to stay (Gallagher & Palmer, 2020). Therefore, research into online learning is valuable for educational institutions, especially to explore camera use by students during online classes and the impacts on teachers' job satisfaction and well-being. Several studies (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Gherheş et al., 2021) aimed at understanding why students were not turning on cameras found that some of the reasons included concerns related to privacy, internet connectivity issues, and a lack of access to technology. In Gherheş et al. (2021), 75% of participants cited a need for privacy, yet they did not elaborate on any specific concerns, while others confessed to multitasking when their webcams were off. The disadvantages of using their webcams may outweigh the benefits. For example, with webcams off, they remove the risk of being judged by others based on their socioeconomic status or appearance, or they have the freedom to multitask or relax (Gherheş et al., 2021).

However, a lack of webcams and non-verbal cues makes it challenging for teachers to conduct online lessons effectively as they are unable to visibly decipher students' emotional engagement or involvement. As a result, effective communication, social cohesion, and mutual trust between teachers and students may be impacted. Such changes in classroom dynamics and teaching pedagogy may have negative impacts on

teachers' self-efficacy, engagement, and wellness. Unfortunately, there is little research on this relationship.

Although some research exists on the impacts of online learning and teacher job satisfaction and wellness it does not directly explore the connection between student webcam use and teachers' well-being engagement, and satisfaction. For example, Spicksley et al. (2021) claimed that teachers' overall subjective well-being was negatively impacted by the sudden shift online as there were fewer chances to connect with their colleagues. However, there was no examination of the connection between students and teachers. Loose and Ryan (2020) found that teachers felt diminished creativity with online teaching, which negatively affected their students' engagement, and thus they experienced lower emotional engagement with teaching as they sensed their students were not motivated or interested.

Some studies briefly explored a link between student camera use and teacher efficacy. Castelli and Sarvary (2021) implied that without the aid of visual cues, teachers could not rely on students' non-verbal communication to gauge their involvement, attention, or comprehension levels and were therefore unable to effectively respond to students' needs. Cooper (2020) reported how strange the experience was for teachers to be faced with students' black boxes during online classes and how ineffective this disconnect made them feel. This could mean that when student webcams are turned off, it poses challenges for teachers to effectively engage their students in learning. Despite this, there have been no in-depth studies or literature reviews that explore the potential impact student camera use has on teachers in the three areas of self-efficacy, wellness, and engagement. As Gherheș, et al. (2021) pointed out, "the relevance of the research, besides the scarcity of studies on the topic, is given by the fact that finding and understanding the reasons for this behaviour are, in fact, the first steps in undertaking regulatory interventions on it" (p. 1).

11

Research in this area is needed as we move towards greater online learning opportunities. As outlined, online learning has offered a plethora of opportunities for teachers and students since the beginning of the pandemic. However, as the e-learning industry continues to grow, there is no automatic guarantee that HE can increasingly offer its online programs without jeopardizing the quality of teaching and learning. More specifically, there is a risk that the ability to effectively communicate, foster online relationships, and build trust between teachers and students will be impacted without the use of webcams. As a result, this could invariably have adverse effects on a teacher's energy and job enthusiasm and possibly erode TSE and work engagement while teaching online. If such impacts exist for teachers, it is important to understand them and develop ways to keep teachers engaged in their professions. Hence, society needs to consider what moderating variables contribute to student webcam use and how it may be impacting teacher performance and well-being.

1.3   Research Purpose

The purpose of the following literature review is to explore the relationship between post-secondary students' webcam use and teachers' self-efficacy, engagement, and well-being to contribute to research on effective educational practices. There were two aims of this study: 1) to explore why students are using or not using their cameras in class; and 2) to explore how student webcam use impacts teachers in the areas of engagement, well-being, and self-efficacy.

First, the goal was to explore why students are using or not using their cameras during synchronous lessons to understand why there are ongoing challenges. This information may benefit teachers and contribute to their overall work satisfaction. For example, gaining an understanding of why students choose to use or not use their cameras may result in less of an impact on teacher self-efficacy. As a result, teachers might be less inclined to interpret students' lack of webcam use personally or negatively.

Furthermore, it may help to highlight any potential discrepancies between students' intentions and teachers' expectations related to the online classroom. Hence, shedding light on students' webcam behaviours could foster teacher engagement and well-being as teachers may be encouraged to plan alternate ways to engage their students more effectively. In turn, this will improve the quality of online education.

The second aim of the study was to explore how student webcam use can impact teachers' self-efficacy, engagement, and well-being. Gaining a better understanding of how student webcam use can either positively and negatively influence teachers can shed light on factors that help or hinder teachers' self-efficacy and engagement. More specifically, when educators are aware of the impacts on teachers' confidence, engagement, and motivation to teach online when they cannot see their students, they can appreciate the ongoing challenges for teachers. This information will highlight the critical need for providing better support, which can mitigate any potentially harmful impacts on teachers' mental health and well-being in an online environment. Ultimately, when educators gain a better understanding of what is working and what is not, best practices can be implemented, resulting in stronger educational communities and more supportive professional workplaces. Thus, this review of literature aims to explore this relationship within the context of HE and online classes since the start of the COVID-19 pandemic.

Exploring these areas will address the current research gap. As Gherheş, et al. (2021) pointed out, there is a scarcity of studies exploring this topic despite its relevance to the educational field. It will also contribute to best practices for online learning so that it remains a viable option for long-term sustainability and growth in the future of HE (Bond et al., 2021). By illustrating the fundamental differences between traditional and online classrooms, it can help bridge the gaps between one teaching modality and the other. In turn, this can demonstrate the need for new approaches as the online industry

continues to grow in HE (Huang et al., 2022; Sokal et al., 2020). Finally, investigating

this area will help sound the alarm for educational institutes to better support their

teachers in the online environment, (Ma et al., 2021; Watkins, 2021). Ultimately, this

research can only strengthen professional communities, improve student results, and

foster the engagement, self-efficacy, and well-being of teachers.

To summarize the research questions posed for this study are as follows:

- *What factors have influenced students' decisions to use or not use their webcams during synchronous lessons since the beginning of the COVID-19 pandemic?*

- *What effect has student webcam use or non-use had on teachers' self-efficacy and engagement, impacting their well-being since the beginning of the COVID-19 pandemic?*

1.4 *Positionality*

This research is personally and professionally interesting to me as an educator. I

began my professional career as an ESL instructor in Tokyo, Japan in 1996, and since

then, I have had the opportunity to teach English communication skills at several

colleges around the Greater Toronto Area. Over the years, I have gained a deep

appreciation for how rewarding teaching can be when I have the opportunity to

emotionally connect with my students. However, the abrupt shift online at the start of

the Covid-19 pandemic in 2020 proved to be a sharp contrast to the in-person experience

I had carefully crafted throughout my 25-year career as a teacher. Many of the activities

and techniques I had honed for the traditional classroom did not translate well to the

online learning experience. Moreover, the student energy and engagement I had always

thrived on while teaching my students in person was suddenly replaced by a wall of black

boxes during my synchronous classes. Indeed, the digital classroom, particularly web

video conferencing, seemed to pose a void I could not put my finger on.

In fact, teaching during the first six months of the pandemic was the impetus to begin my Master of Education degree at Ontario Tech University in 2021. I wanted to figure out what was missing and how to build better connections with my students. Initially, I believed that gamifying the online learning experience would solve the perceived disconnect I was sensing. However, I began to realize that, regardless of how interactive I strived to make my classes, my efforts did not always guarantee student participation or engagement. I also discovered that the expectations I had originally started with in regard to student webcam use were not necessarily aligned with student behaviours, nor were they realistic for everyone.

1.5   Theoretical Framework

Before answering these research questions, a theoretical framework must be established on which an analysis of the research can be grounded. A theoretical framework aims to provide a structure "that can hold or support a theory of a research study" (Swanson, 2013, p. 122) and to synthesize the "thoughts of giants" in a particular field of research (Kivunja, 2018, p. 46). It summarizes a combination of one or more formal theories, as well as other empirical findings and concepts from the literature (Kivunja, 2018). It also serves as the foundation of a qualitative study such as a literature review and is used to investigate and understand a research problem by analyzing the data and interpreting results (Swanson, 2013). Since the goal of this review is to examine how student webcam use impacts TSE and engagement, the relevant theories selected to guide this investigation fall under the umbrella of psychology. More specifically, it draws upon the theories of Moore's (1993) Transactional Distance, Bandura's (1997) Self-Efficacy, Schaufeli et al. 's (2006) Work Engagement, and Diener's (1984) Subjective Well-Being. These theories were used to gain a better understanding of possible disconnects between students' webcam behaviours and teachers' expectations, as well as its overall impacts on teacher wellness. These theories are briefly described in the

15

introduction but will be analyzed in light of the literature review findings later in the discussion.

1.5.1 Theory of Transactional Distance

The first theoretical lens that can help investigate the online teaching and learning environment is Moore's Theory of Transactional Distance (1993). It aims to explain how presence can be perceived differently, depending on settings and modalities, and why people may tend to feel closer in person compared with online learning (Dennen et al., 2021).

The theory embodies three concepts, including the course structure, instructor-to-student communication, and student autonomy, and suggests that these factors can inversely influence one another (Moore, 1993). For course structure, Moore (1993) emphasized that it is challenging for a course to meet the needs of every single student or learning type. However, a course's flexibility or rigidity and whether it can address students' needs will determine the perceived distance between teachers and students (Moore, 1993). Dialogue encompasses not only the frequency of two-way communication but also the quality in that it helps students learn (Moore, 1993). In this sense, the perceived separation between instructor and learner can increase the "psychological and communications gap", leading to potential misunderstandings in communication (Moore, 1991, p. 2). Lastly, student autonomy is connected to a learner's independence and ability to self-direct throughout their learning process. If interactions between instructors and students decrease, learner autonomy must increase to offset this perceived distance.

Thus, in the application of the theory to the e-learning environment, the perceived distance that separates students from their instructors has the potential to be magnified or reduced, depending on the nature of this relationship.

1.5.2 Self-Efficacy Theory

Under the umbrella of Bandura's (1986) social cognitive theory, self-efficacy refers to an individual's belief about their own capabilities and skills to successfully complete tasks and achieve outcome expectancies. Furthermore, it is one's ability to cope with and persist through obstacles along the way to achieve their goals (Bandura, 1997). Bandura also found that when individuals feel efficacious, they have less negative affect, and this can increase their resilience and efforts to achieve more challenging goals. Based on Bandura's social cognitive theory (1997), one's sense of self-efficacy stems from their mastery experiences, vicarious experiences, affective and physiological states, and verbal persuasion. When applied to online teaching, the degree to which teachers feel competent to perform various aspects of their job will determine how efficacious they feel.

1.5.3 Work Engagement

According to Schaufeli et al. (2006), work engagement is a positive state "considered to be the antipode of burnout" (p.702). Based on the work engagement theory, if an employee feels emotionally and motivationally fulfilled, work health and performance will thrive (Schaufeli et al., 2006). Furthermore, the amount of vigour, dedication, and absorption an employee has will determine how engaged they are while working (Schaufeli et al., 2006). First, when an employee has vigour, they are energetic, persistent, and mentally resilient while working, even when work situations become challenging (Schaufeli et al., 2006). Secondly, a dedicated employee is enthusiastic, inspired, proud, and positively challenged in their work duties and purpose (Schaufeli et al., 2006). Lastly, when an employee is fully absorbed and happy in the work they are doing, their work engagement increases as well (Schaufeli et al., 2006).

In brief, when employees are engaged in their jobs, they are energetically and effectively connected with their work duties and activities, which will give them the

motivational drive to manage ongoing occupational demands (Schaufeli et al., 2006). The concept of work engagement can also be applied to the sustainability of any educational system (Obrad, 2020) in that the obstacles posed in a digital environment can reflect in a teacher's physiological and emotional states (Huang et al., 2022).

1.5.4 Subjective Well-Being

Lastly, under Diener's (1984) theory of Subjective Well-Being (subjective well-being), the concept of one's overall well-being can be subjectively measured by the level of satisfaction and positive affect they report having in life. In other words, a person's subjective well-being hinges on how they emotionally and cognitively assess the quality of their lives. This is done by factoring in emotions, values, and evaluations, which may vary significantly based on one's culture or life circumstances (Diener, 1984). The theory has three main components: frequent positive affect, infrequent negative affect, and cognitive evaluations of factors such as life satisfaction (Andrew & Withey, 1976). Consequently, the degree of satisfaction one has with work, relationships, or life in general can be part of their valuation process on an ongoing basis (Diener, 1984).

In addition, an individual's happiness can be considered to be "both a trait and a state" (Diener, 1984, p. 550). As for the trait of happiness, since it is a "predisposition to experience certain levels of affect", it is best "measured as independently from current mood as possible" (Diener, 1984, p. 550). Accordingly, determining how consistent or stable one's characteristic of happiness is can only be measured empirically (Diener, 1984). On the other hand, when one's happiness is viewed as a state, their emotions or feelings must be examined at certain moments rather than on average. Consequently, their happiness will be derived from or dependent on their current situation, which may make it variable or inconsistent (Diener & Larsen, 1984).

Subjective well-being also stems from one's own perception that they are indeed working towards achieving their goals, giving them a sense of mastery (Diener, 1984).

This sense of perceived accomplishment can stem from one's mood, engagement, and immersion in activities, as well as positive social relationships (Diener, 1984). Furthermore, considering the diversity of people's goals, strengths, and values, subjective well-being will naturally be assessed differently, depending on the individual. Thus, the concept of well-being cannot be defined unilaterally; instead, an individual must determine their own definition of well-being based on their unique goals and life circumstances (Diener, 1984). Moreover, Diener and Fujita (1995) found that people were happier when they possessed the necessary resources to achieve their goals, and Okun et al. (1984) found evidence that subjective well-being and health influence each other. When applied to an online environment, a teacher's well-being may be derived from both their general trait of happiness and their perceived emotional and cognitive satisfaction while teaching in an online environment.

Figure 1

Theoretical Framework Conceptualization
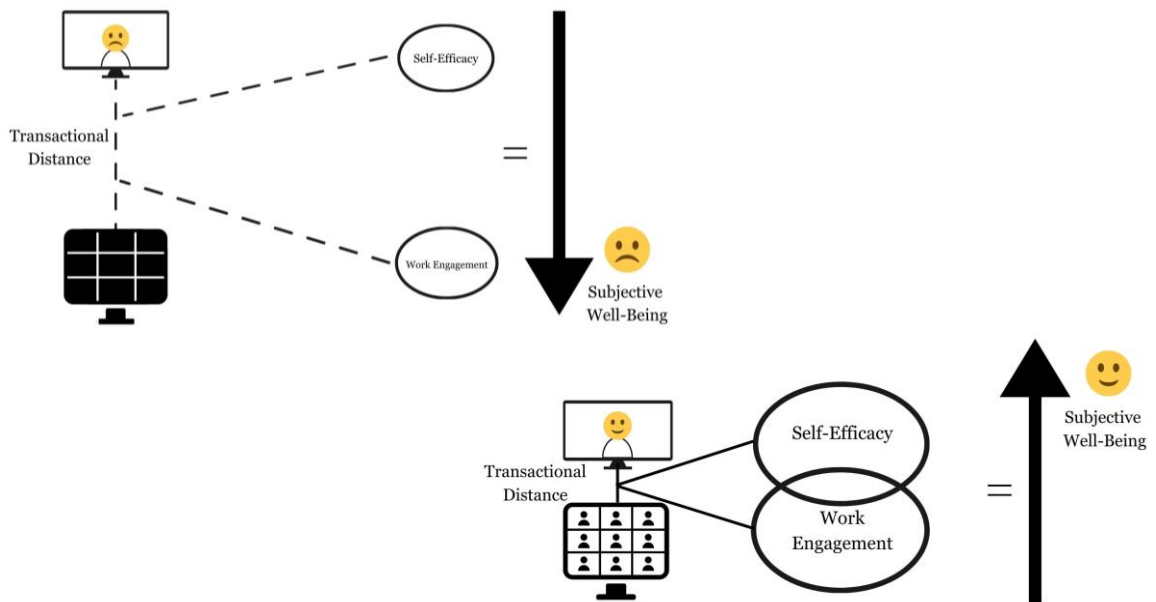
Therefore, by establishing the theoretical framework that includes Transactional Distance, Self-Efficacy, Work Engagement, and Subjective Well-Being, a review of the literature will be viewed through these lenses and will be discussed in the final chapter.

Chapter 2. Research Method

To answer these research questions, a literature review was conducted to examine correlations between student webcam use and its effects on teachers' engagement, self-efficacy, and wellness. The goal of a systematic review is to gather and synthesize primary research relevant to a specific predetermined question or questions (Pollock & Berge, 2017). The stages of conducting a systematic review include clarifying goals and methods for search criteria, locating suitable research, gathering data, assessing its overall quality, synthesizing the evidence, and interpreting the results (Pollock & Berge, 2017). The purpose of up-to-date systematic reviews is to identify a rapidly growing body of academic research and investigate potentially conflicting results to inform current practices or policies or to highlight the need for further research (Munn et al., 2018; Pollock & Berge, 2017).

2.1   Eligibility Criteria

The first step was to define inclusion criteria (Pollock & Berge, 2017). Initially, the focus was on HE in Canada and the United States since the start of the pandemic, so only North American college and university studies conducted from the start of 2020 were considered. Since this approach yielded limited results, the search criteria was expanded to also include studies conducted in high school, both within and outside of North America. As a result, literature type inclusion were articles based on a) students and learners, gender, geographical location, and socioeconomic status enrolled in online education programs; and/or b) online teachers of any gender, age, geographical location, professional teaching position (i.e., tenure, non-tenure, sessional, contract, full-time, or part-time) who are teaching students and/or adults in either public or private educational institutes or adult learning programs. Furthermore, the initial goal was to gather English-language, peer-reviewed journals and empirical research based on qualitative, quantitative, or mixed methods data and scoping reviews, along with any

older articles that would provide foundational theoretical research. Also, studies focusing on factors influencing students' webcam use/non-use and those investigating the effects of student webcam use/non-use on teachers' engagement and self-efficacy were included. Furthermore, considering the novelty of synchronous learning since the start of the pandemic, empirical research was limited, so literature reviews, commentaries, theoretical literature, perspective-based literature, technical reports, dissertations, and theses were included. On the other hand, working papers, book chapters, conference proceedings, and studies focusing on asynchronous learning were excluded.

2.2   Information Sources

Scholarly articles were retrieved through various electronic platforms and databases including ERIC, PsycINFO, JSTor, ProQuest, and SpringerLink. Ontario Tech University library, Education Research Complete, Academic Search Premier from 2020 to 2022. In addition, academic journals selected included the International Journal of Educational Research Open, Public Library of Science, Ecology and Evolution, Sustainability, Teacher Educators' Journal, Journal of Learning and Teaching, Frontiers in Psychology, European Journal of Investigation in Health, Interactive Learning Environments, Journal of Adult and Continuing Education, Amfiteatru Economic, Neuro Regulation, Curēus, and Post Digital Science and Education. Lastly, Google Scholar was utilized to further locate any updated research that had not been uncovered with the initial searches.

Table 1, Literature inclusion criteria, provides an overview of the literature that was included, as well as publication sources, participant demographics, and keyword search criteria.

Table 1

Literature inclusion criteria

Literature Type	Inclusion: Empirical studies based on qualitative, quantitative, or mixed methods data, peer-reviewed journals, literature reviews, commentaries, theoretical literature,

	perspective-based literature, technical reports, dissertations, and theses
	Exclusion: Working papers, book chapters, conference proceedings, and studies focusing on asynchronous learning
Publication Source/Years	ERIC, PsycINFO, JSTor and SpringerLink/2020-2022
Participants	(a) Students and/or adult learners of any gender, learning difficulty (or not), geographical location, and socioeconomic status enrolled in online HE programs and/or (b) online teachers of any gender, age, geographical location, professional teaching position (e.g., tenure, non-tenure, sessional, contract, full-time, part-time), who are teaching students and/or adults in either public or private HE institutes or adult learning programs.
Keywords	
Category 1: e.g. Student webcam use	Studies focusing on factors that influence students' (lack of) webcam use in synchronous classes in HE.
Category 2: Impacts on teachers' mental health	Studies investigating the effects that a lack of student webcam use during synchronous lessons in HE can have on teachers' engagement, self-efficacy, and/or well-being.

2.3 Search Strategy

Key search term criteria included a combination of (teacher OR instructor OR educator) AND (post-secondary OR "higher education" OR college OR university OR "high school") AND ("COVID-19" OR covid OR pandemic) AND (engagement OR "work engagement") AND (self-efficacy OR "teacher self-efficacy" OR TSE) AND (empirical OR theoretical OR mixed OR quantitative OR qualitative). Once articles met the initial inclusion criteria, abstracts for all articles were read first to determine whether they met the eligibility criteria. Once this was established, each full-text article was skimmed through to further decide its quality and relevance, then read thoroughly to highlight similar themes in relation to other articles. Ultimately, a total of 16 articles were found: two articles met the criteria for question 1, five articles met the criteria for question 2, and ten articles met the criteria for both questions 1 and 2 (Table 2).

Table 2

Articles used based on research questions 1 and 2

Articles	Articles used for		
	Only Q1	Only Q2	Both Q1 and Q2
Analysing Students' Reasons for Keeping Their Webcams on or off during Online Classes. (Gherheş, et al., 2021)			0

Reference			
Avoid Zoom fatigue, be present and learn. (Peper et al., 2021).			o
Determinants of work engagement among teachers in the context of teleworking. (Obrad & Circa, 2021)		o	
Factors for Sustainable Online Learning in Higher Education during the COVID-19 Pandemic. (Chu et al., 2021)			o
Generation invisible? Higher Education Students'(Non) Use of Webcams in Synchronous Online Learning. (Bedenlier et al., 2020)	o		
Impact of Web-Based Meeting Platform Usage on Overall Well-Being among Higher Education Employees. (Kershaw et al., 2021)		o	
Let's talk about webcams, and a pedagogy of kindness. (Gilmour, 2021)			o
Lights, camera, action? A reflection of utilizing web cameras during synchronous learning in teaching education. (Day & Verbiest, 2021)			o
More Knowledge, More Satisfaction with Online Teaching? Examining the Mediation of Teacher Efficacy and Moderation of Engagement during COVID-19. (Huang et al., 2022)		o	
Online university teaching during and after the Covid-19 crisis: Refocusing teacher presence and learning activity. (Rapanta et al., 2020)			o
Prevalence and health correlates of Online Fatigue: A cross-sectional study on the Italian academic community during the COVID-19 pandemic.(Bonanomi et al., 2021)		o	
Privacy Concerns Over the Use of Webcams in Online Medical Education During the COVID-19 Pandemic. (Rajab, & Soheib, 2021)			o
Reimagining higher education during and post-COVID-19: Challenges and opportunities. (Neuwirth et al., 2021)			o
Privacy Concerns Over the Use of Webcams in Online Medical Education During the COVID-19 Pandemic. (Rajab, & Soheib, 2021)			o
Reimagining higher education during and post-COVID-19: Challenges and opportunities. (Neuwirth et al., 2021)			o
Student disengagement in web-based videoconferencing supported online learning: an activity theory perspective. (Maimaiti, et al., 2021)			o
Webcams and Social Interaction During Online Classes: Identity Work, Presentation of Self, and Well-Being. (Hosszu et al., 2021)			o
Why students do not turn on their video cameras during online classes and an equitable and inclusive plan to encourage them to do so. (Castelli & Sarvary, 2021)			o

2.4   Data Analysis

Before commencing the data analysis process, the collection of literature was conducted over the first six months of 2022. Throughout this process, the articles of interest were entered into a spreadsheet (Appendix A) and organized alphabetically, along with titles, authors, publication years, journal names, participants' demographics, data collection methods, research questions, and major findings.

The next step involved reviewing these selected articles. Using a self-created colour-coding method, essential information was first highlighted, then words and phrases were colour coded that identified different questions: 1) reasons why students were using or not using their cameras; 2) camera use impacts on teachers' self-efficacy; 3) camera use impacts on teachers' engagement; and 4) camera use impacts on teachers' well-being. The theoretical frameworks guided the analysis of the articles. Key words or phrases were identified and highlighted based on knowledge of the theoretical frameworks.

Initially, 32 articles were selected for the literature review, but after further and in-depth analysis (review and coding), a total of 16 articles were selected, including one for research question #1, four for research question #2, and 11 for both questions #1 and #2. Only these articles presented information that could answer the research questions.

After colour-coding the information from all 16 articles the words or phrases were entered into an excel spreadsheet with the corresponding research questions. These lists were reviewed several times to identify overlapping information and themes of how they answered the research questions. The common themes were then identified. These are presented in the findings.

Chapter 3. Literature Review Findings

Research question #1 investigated which factors have influenced students'
decisions to use or not use their webcams during synchronous lessons since the
beginning of the COVID-19 pandemic. Thus, the goal was to examine the phenomenon of
students' camera use before exploring its impact on teachers. Research question #2
investigated what effects student webcam use or non-use has on teachers' self-efficacy
and engagement, impacting their well-being, since the beginning of the COVID-19
pandemic. This chapter will now present the findings of those two research questions as
a critical review of the literature.

3.1   Webcam Use in Online Learning

What factors have influenced students' decisions to use or not use their webcams during
synchronous lessons since the beginning of the COVID-19 pandemic?

To answer this question, a review of the literature was conducted which included
12 studies. Most of this research was based on participants in post-secondary institutes,
except for one study (Hosszu et al., 2021) which focused on K-12, with 91% of the
students in high school, and another which focused on educators in synchronous
meetings with other educators (Dennen et al., 2021). All studies and articles were
published after March 2020, the start of the COVID-19 pandemic. The findings
suggested that students chose to use or not use their cameras throughout the pandemic
for multiple reasons, although in the literature, there were more reasons discussed for
non-use. These reasons are highlighted below.

3.1.1   Reasons Why Participants Use Webcam

The literature examining reasons why students use their cameras uncovered two
main themes: building connections with others, including teacher-student and student-
student relationships, and fostering student engagement.

Building Connections with Others

As with the traditional classroom, creating a successful learning community in an online environment stems from establishing strong relationships, trust, and rapport with others. Despite the previously outlined limitations of WVC, participants from various studies reported that webcam use had the potential to cultivate relationship-building with others (Bedenlier et al., 2020; Castelli & Sarvary, 2021; Day & Verbiest, 2021; Dennen et al., 2021; Gherheş et al., 2021; Maimaiti et al., 2021). Fostering relationships with others can happen in several different ways, according to online participants' views. First of all, whether a virtual meeting aims to teach or collaborate, building a social presence was important for connecting with others (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Dennen et al., 2021; Maimaiti et al., 2021). When webcam use was encouraged, non-verbal communication including facial expressions and eye contact was found to promote social presence (Dennen et al., 2021; Maimaiti et al., 2021) and increase student satisfaction and learning gains with others (Maimaiti et al., 2021). Furthermore, webcams helped to build rapport and trust, which led to a sense of identity within a social group (Castell & Sarvary, 2021). It was also reported that webcams supported closer relationships with others, which were considered to be essential when establishing a social presence (Bedenlier et al., 2021).

In addition to social presence, webcam use made relationships seem more authentic (Castelli & Sarvary, 2021; Dennen et al., 2021). This was because students felt that being able to see and hear one another made their interactions more genuine (Castelli & Sarvary, 2021). Similar results were found in Dennen et al. (2021) who revealed that over 80% of participants felt closer to those who used their webcams. Moreover, more than 80% of participants found it more interesting to listen to others who were using their webcams as conversations felt more real. However, it is important to note that only 66% of participants actually believed others were listening to them

more closely when they were speaking with their webcams on. In other words, even though participants reported conversations to be more interesting to listen to when they could see the speaker, the speaker did not perceive their interest as often (Dennen et al., 2021). The study did not elaborate on reasons why participants sensed others were not paying attention.

The literature similarly discussed that webcam use may increase the quality of communications for better relationship building (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Day & Verbiest, 2021; Dennen et al., 2021; Gherheş et al., 2021). For instance, webcam use was found to enhance group cohesion (Bedenlier et al., 2021), as well as open communication, collaborative learning, and teacher-student and student-student relationships (Castelli & Sarvary, 2021). It was also found to reduce isolation by making students feel part of the learning community, which incentivized them to engage in virtual discussions or email peers for help when necessary (Day & Verbiest, 2021). Furthermore, webcams were believed to make facilitating discussions easier and interactions smoother because participants had access to others' non-verbal communication (Dennen et al., 2021; Gherheş et al., 2021). Gherheş et al. added that since only 14.7% of students used webcams to improve their communication with teachers, there should be further investigation into which teacher profiles elicit student webcam use. All in all, the specific reasons why students used webcams to build relationships included social presence, authentic relationships, and the quality of communication.

Fostering Student Engagement

In addition to aiding students with fostering relationships in their virtual classes, webcams were found to increase student engagement. More specifically, students felt academically and socially engaged throughout the learning process when they were using their webcams as they were more inclined to pay attention and complete tasks (Day &

Verbiest, 2021; Hosszu et al., 2021; Maimaiti et al., 2021; Rajab & Soheib, 2021).

According to the high school students in Maimaiti et al., and the third and fourth-year university students in Rajab and Soheib, students were engaged and motivated to work harder when they felt like the instructor was observing them. Similarly, observations made of bachelor and master students revealed that being able to view others' facial expressions made discussions more productive and engaging and helped students to pay better attention (Day & Verbiest, 2021). A few students admitted their initial plan was to use their webcams to engage with others, but since the teacher continued to pressure them to use webcams, they felt less inclined to do so (Hosszu et al., 2021). However, when teachers did not mandate webcams, students chose not to use them but admitted to having problems concentrating, and this led to increased distractions and lower engagement (Maimaiti et al., 2021). This correlated with Neuwirth et al. (2021), who stressed that the students' psychological engagement would be negatively impacted by a lack of student webcam use, thereby reducing interactive learning. Thus, Neuwirth et al. suggested that students be reminded they were indeed depriving themselves of a quality educational experience when they chose not to use their webcams, but students in this study did not voice similar concerns.

Although various studies highlighted the benefits of webcam use, they also included reasons why students did not want to use their cameras. These reasons will be discussed in the next section.

3.1.2 Reasons Why Participants Do Not Use Webcams

Regardless of the benefits of webcams outlined by some students and educators, the majority of studies focused on the reasons why students chose not to use their webcams during their online classes. These reasons included personal psychological reasons, concerns for privacy, technical issues, digital inequity, social norms, and a desire to multitask.

Personal Psychological Reasons

Throughout the literature, the most prevalent reason for a lack of student webcam use stemmed from personal psychological issues. First of all, the way students view themselves and their environment, in addition to concerns about how others perceive these elements, may moderate their motivation to use cameras in an online setting. For example, it was found that students opted to keep webcams off due to feelings of self-consciousness (Bedenlier, 2020; Castelli & Sarvary, 2021; Maimaiti et al., 2021; Neuwirth et al., 2021; Peper et al., 2021; Rajab & Soheib, 2021). In Castelli and Sarvary (2021), the most common issue cited by 41% of students for non-webcam use related to concerns about their personal appearance online. More specifically, webcams made students feel self-conscious about others watching them or how their facial expressions or surrounding environment would be perceived by classmates (Castelli & Sarvary, 2021; Neuwirth et al., 2021; Rajab & Soheib, 2021). This was especially true if students felt they had not sufficiently prepared themselves to be on camera (Neuwirth et al., 2021). Some students even complained that webcams served as a type of extra mirror, making it harder to speak in front of others, especially if they lacked confidence (Maimaiti et al., 2021). Others felt more self-conscious responding to a large group online as they were concerned about being judged by their peers (Peper et al., 2021). Participants also reported that being able to see themselves while speaking was not at all common before synchronous classes became the norm (Peper et al., 2021; Bedenlier et al., 2021). In fact, this novel phenomenon could make students more prone to negatively self-judge their own image during synchronous Zoom classes when cameras were in use (Peper et al., 2021). This sentiment was echoed in Bedenlier et al. (2021), a study based on n=1578 university students in Germany, who hypothesized that some students may be uncomfortable using their webcams when others are not because it is a fundamentally different type of interaction than in person. More specifically, students have no sense of

who is looking at them but at the same time, they can see themselves, which may feel psychologically unnatural. On the other hand, when students felt a sense of comfort and lack of judgment from others, they were more likely to use their webcams to verbally engage with others in their online courses (Bedenlier et al., 2021; Castelli & Sarvary, 2021).

Additionally, webcam use was found to make students more anxious (Day & Verbiest, 2021; Gherheş et al., 2021; Gilmour, 2021; Peper et al., 2021; Rajab & Soheib, 2021). In Gherheş et al. (2021), almost 21.6% cited reasons for a lack of webcam use to include anxiety, fear of exposure, and shyness in front of classmates (p. 5). When asked for suggestions to increase comfort levels for more webcam use, 38% believed there was no solution, while 19.1% stated that encouraging student interaction would increase the likelihood of student webcam use. Moreover, to improve teacher-student communication, teachers needed to earn students' respect, conduct more interactive lessons, and encourage webcam use during online activities (Gherheş et al., 2021). Others proposed only permitting teachers to see students rather than for students to be seen by others (Gherheş et al., 2021). However, it is important to note that more than half of the participants in Gherheş admitted they did not agree to keep their webcams on during their online classes. A similar attitude towards camera use was voiced in Rajab and Soheib (2021), in which 91.5% of the 319 clinical medical students in a private university in Saudi Arabia disagreed with using webcams during their online classes. Out of these participants, almost 65% reported increased anxiety and stress using their webcams. It must be noted that over 63% (n=202) of respondents in Rajab and Soheib were female. Lastly, Gilmour (2021) and Day and Verbiest (2021) highlighted that when teachers mandated webcam use during online classes, it could lead to student anxiety, stress, or lower well-being. Gilmour (2021) further reiterated that educators must

understand their role should be to support and engage students in a way that makes them comfortable, not distressed.

Concerns for Privacy

Another main finding was that participants felt that webcams invaded their privacy (Bedenlier et al., 2021; Day & Verbiest, 2021; Castelli & Sarvary, 2021; Gherheş et al., 2021; Gilmour, 2021; Hosszu et al., 2021; Neuwirth et al., 2021; Peper et al., 2021; Rajab & Soheib, 2021). For example, some students cited their discomfort with webcams as they brought classmates and teachers into their private space, which increased their stress and decreased their ability to concentrate (Hosszu et al., 2021). Others also reported concerns related to privacy and personal feelings in connection with webcam use (Bedenlier et al., 2021; Gherheş et al., 2021), where some students worried that classmates or teachers would see others in their backgrounds (Castelli and Sarvary, 2021; Day & Verbiest, 2021; Rajab & Soheib, 2021), including valuable items, which led to less webcam use (Day & Verbiest, 2021). Furthermore, when students perceived their relationship with teachers to be worse or lacked opportunities for open communication or group cohesion, they were more likely to cite privacy concerns or feelings of discomfort related to webcam use (Bedenlier et al., 2021). Similarly, when students lacked a private or quiet home environment for study, it deterred them from wanting to turn on their webcams (Neuwirth et al., 2021; Peper et al., 2021). Interestingly, 75% of the students in Gherheş et al. (2021) who cited privacy concerns did not specify any workplace concerns, but some admitted they enjoyed their ability to relax more when incognito. In fact, students who constantly worried about their lack of private study space reported challenges with paying attention (Peper et al., 2021).

Furthermore, two studies mentioned privacy issues with webcam use in relation to the increased potential for bullying (Gilmour, 2021; Hosszu et al., 2021). For instance, students who feared being bullied online felt additional anxiety and stress when

pressured by teachers to use their webcams as they perceived it as an invasion of privacy, giving potential bullies visual access to their homes (Gilmour, 2021). This additional sense of trauma could negatively impact students' overall mental health (Hosszu et al., 2021). More specifically, students reported concerns about others taking screenshots of them during class if they had their webcams on, which could lead to being further traumatized through bullying after class (Hosszu et al., 2021). It is important to note that Hosszu et al. (2021) based their findings on K-12, while Gilmour (2021) was an opinion article, yet the majority of studies reviewed were conducted in HE, and the fear of bullying was not mentioned.

Various Ongoing Technical Issues

In addition to privacy issues, studies discussed ongoing technical issues related to internet connectivity or access to devices (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Gherheş et al., 2021; Gilmour, 2021; Hosszu et al., 2021; Maimaiti et al., 2021; Neuwirth et al., 2021; Peper et al., 2021; Rapanta et al., 2020). Some studies highlighted that students who struggled with internet connectivity as well as inadequate technology for online learning were less likely to use their webcams during online synchronous classes (Hosszu et al., 2021; Peper et al., 2021; Maimaiti et al., 2021; Rapanta et al., 2020). Rapanta et al., a study investigating the online teaching and learning expertise of four university teachers, specified that using webcams could slow down the connection as it demanded greater bandwidth, creating accessibility challenges for students. Similarly, Castelli and Sarvary (2021) found that n=61 out of 276 cited a weak internet connection for a lack of webcam use, while only n=6 reported their webcam was not working.

Concerns were also raised that certain technology, such as cell phones or tablets, used by students to join their virtual classes may have limited features, posing challenges for participating during class (Neuwirth et al., 2021; Gilmour, 2021; Gherheş, et al., 2021). It was speculated that some students might be accessing Wi-Fi from public spots,

which could limit consistent webcam use capabilities (Gilmour, 2021). Others who were using devices not equipped with webcams made it impossible for them to be seen even if they wanted to be (Gherheş, et al., 2021). In fact, it was found that a high portion of students often joined their online classes using their mobile phones, and because of the small screen size, they would be less likely to turn their webcams on (Gherheş, et al., 2021; Gilmour et al., 2021). More importantly, the real reasons behind a lack of student webcam use may go beyond the commonly used excuses related to technology issues (Bedenlier et al., 2021). Therefore, further research may determine which situations students were more or less inclined to use their webcams, as well as underlying reasons behind the choice to keep cameras turned off (Bedenlier et al., 2021).

Digital Inequity

As for digital inequity, several studies discuss the potential connection between a lack of webcam use and a student's lower socioeconomic status (Castelli & Sarvary, 2021; Day & Verbiest, 2021; Gilmour, 2021; Hosszu et al., 2021; Neuwirth et al., 2021). For example, some students refrained from using webcams due to ongoing issues with access to appropriate digital devices or private spaces to study within their homes (Hosszu et al. (2021). Others cited sensitive reasons for not using their webcams, including being embarrassed about affluent classmates judging them based on their poor living conditions (Castelli and Savary, 2021; Neuwirth et al., 2021). Moreover, it was argued that mandating webcams could disproportionately impact certain student populations (Castelli and Sarvary; 2021; Day and Verbiest, 2021; Gilmour, 2021).

Several of the aforementioned studies highlighted a few considerations and provided follow-up suggestions to help teachers manage these common concerns related to socioeconomic status (Castelli & Sarvary, 2021; Day & Verbiest, 2021; Gilmour, 2021). First, educators need to understand students' individual needs and challenges in relation to webcam use rather than treating the class as a unified body or pressuring students to

turn on their webcams (Castell & Sarvary, 2021; Gilmour, 2021). For example, teachers must carefully consider the diversity of students and the potential complexities behind their choices to not use their webcams (Gilmour, 2021). Moreover, online teaching and learning since the start of COVID-19 has highlighted discrepancies in students' lived and material experiences (Gilmour, 2021). In other words, they do not all have the same level of digital access or knowledge necessary for engaging online (Gilmour, 2021). Therefore, teachers must adopt a kinder pedagogical approach to teaching which will help to remove these barriers rather than risk exacerbating student inequalities (Gilmour, 2021). Furthermore, by integrating a variety of active learning techniques, teachers can better engage and motivate their students, creating a more equitable and inclusive learning environment (Castell & Sarvary, 2021). In turn, this may encourage students to use their webcams and participate more frequently. Lastly, incorporating a more student-centered approach online could decrease any potential stigma and increase empathy and respect for students' contributions, regardless of whether they used their webcams (Castelli & Sarvary, 2021).

Social Norms

As with the traditional classroom, social norms exist during videoconferencing, and these unwritten rules can influence participants' decisions to use or not use their webcams, regardless of what their original intent was. In other words, webcam use depended on the actions of peers. A review of the literature revealed that various studies mentioned how social norms played into webcam use (Castelli & Sarvary, 2021; Dennen et al., 2021; Gherheş et al., 2021; Maimaiti et al., 2021). In Gherheş et al. (2021), over 11% of students surveyed cited class norms for non-webcam use, while almost 53% in Castelli and Sarvary (2021) stated they were following an unspoken norm set by their peers to keep webcams turned off. Some students even admitted that if they had been asked or encouraged to turn on webcams, they would have (Castelli & Sarvary, 2021;

Maimaiti et al., 2021), while others stated the default setting on Zoom had turned off their cameras (Castelli & Sarvary, 2021). However, more participants felt compelled to turn webcams on when asked to as there was more peer pressure to follow suit (Dennen et al., 2021; Maimaiti et al., 2021). In addition, Castelli and Sarvary (2021) stressed the importance for teachers to set an injunctive norm to encourage camera use from the beginning by explicitly requesting it as well as explaining the reasons for it. This could also address students' concerns about their personal appearance and increase the likelihood they would take the time to tend to their physical appearance in anticipation of being on camera. Interestingly, even though participants in Dennen et al. (2021) were adults, they also indicated that one driving force for increased webcam use among educators during online meetings was to increase individuals' comfort levels as well as develop webcam use norms.

Desire to Multitask

As for the last main reason cited by students and educators for a lack of webcam use, a review of the literature found that three studies mentioned the desire to remain hidden while multitasking during online classes and meetings (Castelli and Sarvary, 2021; Dennen et al., 2021; Gherheş et al., 2021). In an anonymous survey, over half the students, including both undergraduate and graduate students, admitted to multi-tasking or carrying out activities unrelated to schoolwork during their online classes (Gherheş et al., 2021). Similarly, more than half of the educators in Dennen et al. (2021) confessed to walking away from their computers when webcams were turned off. Additionally, participants reported that when they played less active roles during meetings, they were more likely to turn their webcams off, making multi-tasking much more prevalent online as opposed to in-person meetings (Dennen et al., 2021). In contrast, Castelli and Sarvary (2021) revealed an insignificant number of undergraduate students citing non-webcam use to be related to concerns that others would see them not

paying attention or multitasking. It is important to note the similarities and differences in data collection methods and respondent demographics between Castelli and Sarvary (2021), Dennen et al. (2021), Gherheş et al. (2021), in consideration of whether or not participants would be more or less forthcoming about their true intentions for non-webcam use.

Overall, an in-depth look at the literature revealed numerous reasons as well as possible moderating variables for webcam use and non-use among participants in an online synchronous environment. Some of the main reasons for webcam use highlighted the desire to foster relationships with others, including establishing a social presence, building authentic relationships, and enhancing the quality of communication. In addition, students believed webcams made them more academically engaged, accountable, and motivated. The moderating variables for webcam use included increasing comfort levels and group cohesion, encouraging interaction, and improving teacher-student relationships.

As for the main reasons uncovered for non-webcam use among participants, these included personal psychological reasons, such as feelings of self-consciousness or anxiety. More specifically, there were concerns related to personal appearance, fear of judgment, exposure, shyness, anxiety, and overall discomfort that others were watching them. Others cited privacy concerns, including worry others would see their background while some students enjoyed being incognito. Also, technological problems were mentioned such as Internet connectivity issues, access to devices, and technology with limited features. Another issue raised related to socioeconomic status, including being embarrassed about poor living conditions or not having a private or quiet space to study. Finally, social norms and a desire to multitask were discovered as additional reasons for non-webcam use. The moderating variables for non-webcam use included teacher-student relationships which were perceived to be poor by students, such as a lack of

respect or disapproval with teachers who mandated webcams. Furthermore, students who perceived a less comfortable or more judgmental environment, or fewer opportunities for open communication or group cohesion were more likely to cite discomfort with webcams. Also, a lack of appropriate resources or access to technology, including sufficient bandwidth, was found to discourage webcam use among students. Finally, sensitive factors such as lower socio-economic status were less cited as possible moderators but still a significant issue, especially if students were not necessarily forthcoming with this information.

Hence, when teachers cannot see their students, it may have a negative impact on how efficacious they feel and how positively engaged they are while teaching online, which can also impact their overall well-being.

Table 3, Articles and themes used for RQ#1, highlights the articles used and emergent themes.

Table 3

Articles and themes used for RQ #1

	Relationship Building	Student Engagement	Psychological Reasons	Concerns for Privacy	Technical Issues	Digital Inequity	Social Norms	Desire to Multitask
Bedenlier et al. (2020)	o		o	o	o			
Castelli & Sarvary (2021)	o		o	o	o	o	o	o
Day & Verbiest (2021)	o	o	o	o		o		
Dennen et al. (2021)	o		o				o	o
Gherheş et al. (2021)	o		o	o	o		o	o
Gilmour (2021)			o	o		o		
Hosszu et al. (2021)		o	o	o	o	o		
Maimaiti et al. (2021)	o	o	o		o		o	

Neuwirth et al. (2021)	o	o	o	o	o	
Peper et al. (2021)		o	o	o		o
Rajab & Soheib (2021)	o	o	o			
Rapanta et al. (2020)					o	

3.2 Impacts of Student Webcam Use on Teachers

What effect has student webcam use or non-use had on teachers' self-efficacy and engagement, impacting their well-being, since the beginning of the COVID-19 pandemic?

The purpose of this second research question was to explore what effects student webcam use had on TSE, TE, and wellness. To answer this question, a review of the literature was conducted which included 15 studies. Most of this research was based on teachers who taught in online synchronous classes in post-secondary institutes, except for two studies that focused on teachers in K-12 (Hosszu et al., 2021) and K-university (Obrad & Circa, 2020), and two studies which focused on educators in synchronous meetings (Bonanomi et al., 2021; Kershaw et al., 2021). All studies and articles were published after March 2020, the start of the COVID-19 pandemic. An extensive review of the literature failed to uncover any studies which specifically focused on the impacts of student webcam use and non-use on TSE, teacher engagement, and/or wellness. However, the included 15 studies explored at least one of the elements (i.e. teacher engagement). The findings suggested that there were several direct impacts of student webcam use and non-use on teachers' self-efficacy, engagement, and well-being. First, the findings related to impacts on teacher self-efficacy, engagement, and well-being will be reviewed, followed by a review of possible moderating variables, including perceived student engagement, organizational support, and teacher-student relationships.

3.2.1 Teacher Self-Efficacy

Regardless of whether teaching occurs in the traditional or virtual classroom, various factors can either add to or subtract from teachers' self-efficacy. Overall, studies discussed how teachers' self-efficacy was enhanced when they could see students' non-verbals (Castelli & Sarvary, 2021; Gilmour, 2021; Hosszu et al., 2021; Huang et al., 2022; Maimaiti et al., 2021; Neuwirth et al., 2021). For instance, teachers benefited from students' visual feedback as it provided critical input and enabled them to monitor and gauge student comprehension in real-time, as well as evaluate their teaching effectiveness in real-time (Castelli & Sarvary, 2021; Gilmour, 2021; Hosszu et al., 2021; Neuwirth et al., 2021; Maimaiti et al., 2021). As a result, webcams allowed teachers to adjust their approach, pacing, and techniques to ensure learning objectives were being met. Also, student webcam use helped teachers provide additional support to aid students in their overall well-being as changes in student demeanor were often visible when webcams are turned on (Gilmour, 2021). Teachers also believed that having the ability to see their students would give them a sense of control over their students, as well as their progress (Hosszu et al., 2021). On the other hand, Gilmour (2021) raised concerns that mandating student webcams just to give teachers more control in their online classrooms may negatively impact student learning and trust (Gilmour, 2021). Therefore, it was recommended to take a student-centered approach by encouraging, rather than mandating, webcam use (Castelli and Sarvary, 2021).

In contrast, a lack of student webcams was found to negatively impact TSE and also made it challenging for teachers to maintain the smooth flow of communication and the attention of their students. Some teachers also expressed their ongoing frustrations with a lack of webcam use among students in that, regardless of the effort they put forth to include interactive learning material, students' motivation levels still seemed to decrease (Castelli & Sarvary, 2021; Hosszu et al., 2021). Consequently, teachers stated

this impacted their self-efficacy since they had no idea whether students needed support, further clarification, or were even engaged (Hosszu et al., 2021). As a result, teachers felt their inability to effectively teach could ultimately lead to lower student engagement (Castelli & Sarvary, 2021). It was proposed that if teachers suffered from lower self-efficacy and a negative online experience, their overall job satisfaction would decrease as well (Castelli & Sarvary, 2021). A similar disconnect in expectations for webcam use was also highlighted as students considered themselves capable of participating in class, regardless of whether their webcams or microphones were on or off (Hosszu et al., 2021). However, teachers did not trust students to pay attention or be proactively engaged if their webcams were turned off and thus put pressure on students to turn their webcams on (Hosszu et al., 2021). As a result of this sense of obligation, students admitted they felt less inclined to oblige and were also less engaged in the class (Hosszu et al., 2021). A study in China that examined how online teachers' technological pedagogical content knowledge (TPACK) and work engagement correlated with TSE also outlined the negative effects of a lack of student webcam use on teachers (Huang et al., 2022). Furthermore, depending on the subject or teaching task, a teacher's sense of self-efficacy could naturally change. In other words, considering the vast differences between online and in-person teaching, in addition to the demands and complexities of working from home during a pandemic, TSE would vary, based on the teacher and their situation. It is important to note that though teachers possessed information communication technology (ICT) and pedagogical skills, the most important predictor of TSE was work engagement (Huang et al., 2022).

3.2.2 Teacher Engagement

Since the main role of a teacher is to focus on student learning and engagement, achieving these goals can naturally increase a teacher's engagement and job satisfaction. From a pedagogical perspective, for teachers to fulfill the responsibility of engaging their

students throughout the learning process, there are various reasons why they would have the desire to see their students during synchronous classes. Overall, research that focused on TE and student webcam use was limited, but several studies discussed that a teachers' overall work engagement was associated with participants' webcam use (Bonanomi et al., 2021; Castelli & Sarvary, 2021; Gherheş et al., 2021; Hosszu et al., 2021; Huang et al., 2022).

On one hand, teaching was found to be a more positive emotional experience when instructors could visibly see their students (Castelli and Sarvary, 2021; Huang et al., 2022). For example, when students used their webcams, it increased teachers' satisfaction with online teaching since they were able to perceive students' nonverbal engagement and responsiveness (Castelli & Sarvary). As a result, teachers reported warmer, closer, and more comfortable interpersonal relationships with their students. Huang et al. (2022), who investigated teacher satisfaction within an online environment by surveying n=2763 online university teachers in China during the pandemic, also discussed the importance of student webcams. Along with Castelli and Sarvary, Huang et al. reiterated that teachers used students' non-verbal communication, such as body language, facial expressions, and tone of voice to gather clues on whether they were engaged in or comprehending the lesson. Moreover, when students were enthusiastic about learning, they often displayed visual cues which demonstrated their emotional engagement, and it was this type of positive feedback that could increase teachers' overall work satisfaction. Huang et al. additionally highlighted the give-and-take nature of engagement; students generally thrived on their teacher's dedication and enthusiasm, while teachers reciprocally benefited from their students' energy and participation in response to the effort teachers were expending.

On the other hand, with webcams turned off, teachers could not see their students' reactions during online interactions, so this positive reward was not as easy to

attain, leading to lower work engagement (Bonanomi et al., 2021; Castelli & Sarvary, 2021; Gherheş et al., 2021; Huang et al., 2022; Hosszu et al., 2021). Hence, teachers reported feeling demotivated to teach when students hid their faces during synchronous classes (Castelli & Sarvary, 2021; Gherheş et al., 2021; Hosszu et al., 2021; Huang et al., 2022). This was especially true when teachers made the effort to help their students stay visually connected, but students still avoided using their webcams (Castelli & Sarvary, 2021; Hosszu et al., 2021). Consequently, teachers felt that students did not appreciate their effort or that it was an unpleasant experience teaching without student visuals (Hosszu et al., 2021). Interestingly, 90% of the biological science students surveyed in Castelli and Sarvary (2021) reported either limited to no webcam use at all for the entire duration of their online classes. Thus, without student webcam use, online instructors were concerned about whether or not their students were even paying attention in the first place. Furthermore, a lack of webcam use and authentic online interactions in an online environment, in comparison to in-person interactions, could also lead to a decrease in teachers' physical and emotional engagement (Huang et al., 2022). On a similar note, Bonanomi et al. (2021), who studied online fatigue among Italian educators, found that participants' ability to effectively divide their attention among others was limited during videoconferencing. This was especially true in the absence of eye contact as it was challenging to engage and collaborate with others during online meetings.

It was not clear in the aforementioned studies if teachers used their webcams throughout these synchronous classes or only at the beginning, regardless of whether or not students were using theirs.

3.2.3 Teacher Wellness

In addition to TSE and teacher engagement, teacher wellness was also found to be connected to participant webcam use during videoconferencing, but as previously

discussed, the research was limited. In fact, only four studies briefly discussed or briefly mentioned a possible correlation (Bonanomi et al., 2021; Castelli & Sarvary, 2021; Hosszu et al., 2021; Rapanta et al., 2020). Some of these discussed how emotionally draining it was for participants to communicate online, regardless of whether or not they could see each other via webcams (Bonanomi et al., 2021; Castelli & Sarvary, 2021; Hosszu et al., 2021). On one hand, even with the use of webcams, participants had to expend more effort to process nonverbal cues, and this perceived exhaustion and stress could lead to negative psychological effects (Bonanomi et al., 2021). Conversely, a lack of student webcams was found to negatively impact teachers' overall wellness since they felt like they were talking to no one (Castelli & Sarvary; Hosszu et al., 2021). Furthermore, teachers felt that the meaningful social interactions that were an important part of connecting and relating with their students were absent in an online environment (Hosszu et al., 2021; Rapanta et al., 2020). Since a lack of emotional connection could also reduce the overall energy found in an online classroom, an atmosphere perceived as emotionally draining by instructors could also impact their attitudes towards teaching online, as well as their overall well-being and mental health (Hosszu et al., 2021). Similarly, Rapanta et al. (2020) highlighted that only relying on synchronous teaching could be more demanding for teachers and lead to burnout, yet there was no mention of which specific features of synchronous teaching, including webcam use, could lead to burnout.

3.3   Moderating Variables

A further review of the literature revealed possible moderating variables that could affect the degree of impact on TSE, TE, and well-being. Possible moderating variables included perceived student engagement, perceived teacher-student relationship, and perceived organizational support. These may help to better explain the impact levels and provide further insight into the aforementioned research question.

3.3.1 Perceived Student Engagement

As previously mentioned, since student engagement and learning tend to go hand in hand, achieving this dichotomy is one of the fundamental goals of teachers. Therefore, it can be assumed that teachers would derive overall benefits from the perceived motivation and participation of their students. Therefore, if a teacher perceived that webcam use indicated a level of engagement or enjoyment of the course, the non-use of webcams may have more of an impact on their overall wellness. For example, teachers' work engagement was found to depend on how engaged and motivated they perceived their students to be during online learning (Huang et al., 2022; Obrad & Circa, 2021). Also, student webcams allowed teachers to monitor student engagement and participation as they would in the traditional classroom (Hosszu et al., 2021), where teachers could watch students' real-time facial expressions and body language to gauge their engagement and enjoyment (Huang et al., 2022). These facial expressions also provided an important indication that others were listening and engaged (Peper et al., 2021), motivated and emotionally engaged (Chu et al., 2021), as well as attentive and actively participating (Huang et al., 2022). As a result, when teachers could view their students during online lessons, it influenced teachers' enthusiasm and moods (Huang et al., 2022). However, when students refrain from using cameras, teachers may struggle to monitor engagement and thus wrongfully perceive non-engagement. To illustrate, teachers in Day and Verbiest (2021) complained about the "black box" (p. 11) phenomenon since the beginning of the pandemic but highlighted that webcams helped foster student engagement and relationships with others. However, neither Day and Verbiest nor Chu et al. specifically elaborated on how non-webcam use affected teachers' overall well-being.

3.3.2 *Perceived Organizational Support*

The abrupt move online at the start of the pandemic meant that instructors were expected to adopt a new teaching modality, adjust their approach to delivering course material, and manage student expectations accordingly. Considering the fundamental differences between conducting lessons in-person and online, teachers may or may not have felt they had the necessary training and support to manage their online classrooms. Ultimately, the level of perceived organizational support may impact teachers' overall well-being, job satisfaction, or resilience to stress when teaching online (Bonanomi et al., 2021; Chu et al., 2021; Huang et al., 2022; Kershaw et al., 2021; Obrad & Circa, 2021; Rajab & Soheib, 2021; Rapanta et al., 2020). For instance, teachers had to become proficient with new technologies within a short period (Obrad & Circa, 2021) but complained that they had received less than desirable support from their institutions and colleagues to effectively manage their online classrooms (Chu et al., 2021; Huang et al., 2022). Chu et al. (2021) emphasized that because online teachers may be inexperienced, it was important for educational institutes to provide sufficient teacher training to increase their ICT skills and competence with online facilitation. Also, there was a need to continuously invest in robust educational technologies which would enhance the online classroom experience for both students and teachers in the future (Chu et al., 2021).

In terms of seeking out organizational support, a significant correlation was found between teachers who experienced greater work engagement online and their likelihood and willingness to ask for support more quickly and frequently (Obrad and Circa, 2021). Moreover, teachers who experienced high levels of stress were more apt to maintain lower levels of support, as well as lower resilience behaviours (Obrad & Circa, 2021). Thus, perceived organizational support was found to play a key role in strengthening teachers' overall resilience to work stress. In addition, when teachers

reported being more technically and pedagogically competent due to sufficient online training from their educational institutions, they managed better with their online teaching and were more satisfied with their job (Huang et al., 2022; Rapanta & Soheib, 2021). Furthermore, teachers who possessed the necessary technical skills, knowledge, and ability to manage the online system were able to engage their students more effectively during synchronous classes (Chu et al., 2021; Rapanta et al., 2020).

Additional contributing factors related to perceived organizational support for teachers were mentioned as possible moderating variables impacting a teacher's ability to manage their online lessons (Bonanomi et al., 2021; Kershaw et al., 2021). For example, some teachers voiced concerns that they needed better support from their organizations to help them separate their private and professional spheres for overall well-being and mental health with online teaching (Bonanomi et al., 2021; Kershaw et al., 2021). More specifically, Kershaw et al. (2021) uncovered a link between the length of WVC meetings lasting longer than two hours and teachers' lower well-being and increased stress. Furthermore, female university educators who utilized technology more frequently were at a greater risk of increased fatigue, particularly if they had young children (Kershaw et al., 2021; Bonanomi et al., 2021). Whether or not these issues were due to poor scheduling or lack of support by the teachers' organizations was not mentioned in either study.

3.3.3 *Perceived Teacher-Student Relationship*

Along with perceived student engagement and organizational support, an important part of fostering an enriched online learning environment can also include the relationships developed between teachers and their students. When teachers have the opportunity to interact with students, it can positively impact TSE, teacher engagement, and well-being, but without webcams, this may be difficult to attain. Several studies discussed the teacher-student relationship in an online learning environment (Chu et al.,

46

2021; Gherheş, et al., 2021; Peper et al., 2021; Obrad & Circa, 2021; Rapanta et al., 2020).

Some studies highlighted the ongoing challenges teachers faced when trying to connect with their students, including fostering social cohesion and maintaining fluid teacher-student and student-student interactions (Chu et al., 2021; Gherheş, et al., 2021; Obrad & Circa, 2021; Rapanta et al., 2020). Some teachers struggled to earn the respect of their students and encourage student webcam use (Gherheş et al., 2021), while others had challenges with communicating through WVC as they were dealing with distractions, poor attention spans, and slower interactions in comparison to in-person teaching (Rapanta et al., 2020). Similarly, since visual feedback was limited and facial expressions were hard to decipher, especially with more participants in WVC sessions, this could also negatively affect student-teacher interactions (Peper et al., 2021). Consequently, it could lead to inconsistencies in meaning between the sender and receiver.

Furthermore, depending on the study, the teacher-student relationship was seen in a very different light. To illustrate, on a more positive note, Obrad and Circa (2021) asserted that even though the physical distance between teachers and students increased with the move online, teachers felt more psychologically connected to students. In contrast, even though Chu et al. (2021) noted the isolating nature of the online environment for teachers, they alleged that perceived teacher quality and student-teacher interactions were not determining factors in student satisfaction. Moreover, they found that these interactions in an online environment were less effective and thus suggested teachers focus on responding to problems when they occur rather than making the effort to interact with each student. As well, Chu et al. (2021) also reiterated that teachers should focus on facilitating peer learning as well as strengthening the delivery of course materials. Since Obrad and Circa (2021) conducted their study in the early stage of the pandemic, a follow-up longitudinal study investigating how participants' attitudes

47

changed throughout the pandemic would provide a valuable overview. Furthermore, Chu et al. (2021) conducted their study in China, and Obrad and Circa (2021) collected their research in Romania, so this distinction may play a factor in the results.

Despite the limited research, several themes emerged from a review of the literature in terms of the direct and indirect impacts of student webcam use on teachers. First, when students turned on their cameras, teachers reported a more positive emotional experience with increased teacher engagement and job satisfaction. Teacher self-efficacy was also enhanced when they had access to students' non-verbal communication as it provided critical information, allowing teachers to monitor and evaluate their performance in real time. However, when students turned off their webcams, teachers experienced lower work engagement and motivation, the inability to effectively respond to students' needs, and an emotionally draining experience teaching online. As for moderating variables, the themes of perceived student engagement perceived organizational support, and perceived teacher-student relationship were also found to have possible impacts on teachers' self-efficacy, engagement, and well-being.

Table 4, Articles and themes used for RQ #2, highlights the articles used and emergent themes.

Table 4

Articles and themes used for RQ #2

	Teacher Self-Efficacy	Teacher Engagement	Teacher Well-Being	Perceived Student Engagement	Perceived Organizational Support	Perceived Teacher-Student Relationship
Bonanomi et al. (2021)		o	o		o	
Castelli & Sarvary (2021)	o	o		o		
Chu et al. (2021)				o	o	o
Day & Verbiest (2021)				o		

Gherheş et al. (2021)		o				o
Gilmour (2021)	o			o		
Huang et al. (2022)	o	o		o	o	
Hosszu et al. (2021)	o	o	o	o		
Kershaw et al. (2021)					o	
Maimaiti et al. (2021)	o					
Neuwirth et al. (2021)	o			o		
Obrad & Circa (2021)				o	o	o
Peper et al. (2021)				o		o
Rajab & Soheib (2021)					o	
Rapanta et al. (2020)			o		o	o

Chapter 4. Discussion

The goal of this systematic literature review was twofold. First, it aimed to investigate the reasons for student webcam use and non-use in an online synchronous classroom. Second, it examined how student webcam use or non-use impacted teachers' self-efficacy, engagement, and well-being. The goal of the literature was to gain a deeper understanding of both students' and educators' perspectives towards webcam use as it can help to improve the online environment for learning and teaching.

Question one revealed a variety of reasons for students to use and not use their cameras in virtual classes. Two main themes for camera use emerged: relationship building and student engagement. Despite these positive aspects, the majority of the research focused on reasons why students do not want to use their webcams. The six key themes for non-use included psychological reasons, privacy concerns, ongoing technology issues, digital inequity, social norms, and multitasking. For question two, the findings suggest that student webcam use does have an impact on teacher engagement, well-being, and self-efficacy. On one hand, when teachers were able to see their students' non-verbal communication during synchronous classes, they had increased work engagement, self-efficacy, and well-being. On the other hand, without student webcam use, teachers experienced lower work satisfaction, motivation, and emotional engagement. Furthermore, additional moderating variables including perceived student engagement, organizational support, and teacher-student relationships were also found to have possible connections to teachers' self-efficacy, engagement, and wellness. In addition to these findings, comparison, and analysis of the two questions reveal a disconnect between students' intentions to use their webcams and teachers' expectations for student webcam use in synchronous learning. In other words, many students are choosing to keep their webcams turned off, even though teachers prefer their students to use them. Overall, the literature demonstrates that less student webcam use may lead to

lower student engagement in higher education and negatively impact teachers' well-being.

This chapter will now examine the findings of these research questions as they relate to the existing body of literature and theoretical frameworks presented in this paper. First, the results of question one will be discussed, followed by an exploration of question two. Finally, the significance of this study's overall findings will be discussed.

4.1 Q.1. Reasons for Student Webcam Use and Non-Use

The literature review uncovered several reasons why students use their cameras in virtual classes. These were condensed into two main themes, including fostering better relationships with others, and enhancing student engagement. For example, when webcams were used, non-verbal communication allowed participants to establish a social presence and make connections with others (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Dennen et al., 2021; Maimaiti et al., 2021). Webcams also increased the authenticity of online relationships (Castelli & Sarvary, 2021; Dennen et al., 2021) as well as the quality of communication, leading to stronger relationships (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Day & Verbiest, 2021; Dennen et al., 2021; Gherheş et al., 2021).

While the research highlighted the drawbacks to student webcam use in synchronous classes, approximately half of the studies reviewed expressed the desire for more collaboration, yet suggestions for achieving this were inconsistent. For instance, the 12 studies reviewed discussed negative concerns related to webcams (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Day & Verbiest, 2021; Dennen et al., 2021; Gherheş et al., 2021; Gilmour, 2021; Hosszu et al., 2021; Maimaiti et al., 2021; Neuwirth et al., 2021; Peper et al., 2021; Rajab & Soheib, 2021; Rapanta et al., 2020). However, participants in seven of these studies outlined the need for more interaction and collaboration during WVC (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Gherheş et al., 2021; Hosszu et al.,

2021; Maimaiti et al., 2021; Peper et al., 2021; Rapanta et al., 2020;). Despite these findings, the recommendations to increase opportunities for participants to collaborate and interact with others without webcam use were unrealistic, contradictory, or non-existent. For example, a few studies outlined ways that teachers could increase student webcam use despite acknowledging and discussing that webcams could make students feel self-conscious and uncomfortable (Castelli & Sarvary, 2021; Peper et al., 2021; Gherheş et al., 2021). Additionally, Peper et al. (2021) proposed that if students made themselves clearly visible during online lessons, actively used non-verbal cues when speaking, and reduced multitasking and distractions, this would optimize their learning. This was despite the fact that their study had also found that webcam use led to increased anxiety and lower self-esteem. Furthermore, students in Maimaiti et al. (2021) expressed a desire for more collaborative activities during their lengthy and mentally draining online classes. However, even though teachers used their webcams, students nevertheless reported dissatisfaction with their instructor's lack of eye contact, gestures, and facial expressions, citing this to be an additional obstacle in their engagement (Maimaiti et al., 2021). Similarly, teachers who used their webcams complained that students still refrained from using their webcams (Castelli & Sarvary, 2021; Hosszu et al., 2021), leaving teachers to feel underappreciated and displeased with their online teaching experience (Hosszu et al., 2021).

Furthermore, even though some students acknowledged the benefits of webcams, purporting they helped foster relationships and student engagement (Day & Verbiest, 2021; Hosszu et al., 2021; Maimaiti et al., 2021; Rajab & Soheib, 2021), this was not necessarily enough to persuade them to use webcams more frequently. In fact, many students either chose to turn off their webcams or disagreed with teachers mandating webcams (Maimaiti et al., 2021; Castelli & Sarvary, 2021; Gherheş et al., 2021; Bedenlier et al., 2021; Day & Verbiest, 2021; Hosszu et al., 2021; Neuwirth et al., 2021; Rajab &

Soheib, 2021). Additionally, even when participants in these studies used webcams, either from being pressured to or of their own volition, this did not necessarily increase their participation, engagement, or attention. This was especially true among large groups of participants or those who were unfamiliar with one another (Dennen et al., 2021; Gilmour, 2021). Similarly, those in Maimaiti et al. (2021) who used webcams reported feeling cognizant of instructors watching them, so the question remains as to how this may have affected their ability to remain engaged. Moreover, mandating student webcams had the potential to negatively impact students' relationships with their teachers and detract from their engagement and ability to learn (Gilmour, 2021; Hosszu et al., 2021; Peper et al., 2021). Gilmour (2021) further reiterated that the role of educators was to support and engage students in a way that made them comfortable, and not distressed, yet there were no suggestions provided as to how to accomplish this with webcam use.

In addition, findings revealed the more sensitive reasons students had for not using their webcams, which teachers may or may not have been aware of. For instance, some students voiced concerns about the lack of appropriate digital devices or private areas for classes (Hosszu et al., 2021), and being judged by others based on their socioeconomic status (Castelli & Sarvary, 2021; Day & Verbiest, 2021; Gilmour, 2021; Hosszu et al., 2021; Neuwirth et al., 2021) or the fear of being bullied (Gilmour, 2021; Hosszu et al., 2021). These are legitimate reasons that cannot be ignored or discounted by teachers and may lead to ongoing obstacles to webcam use. Moreover, it may require further investigation into whether webcams disproportionately impact certain students over others.

Similarly, various psychological issues served as obstacles to student webcam use. For instance, the manner in which participants perceived themselves during WVC was found to influence their decision to keep their cameras off (Bedenlier, 2020; Castelli &

Sarvary, 2021; Maimaiti et al., 2021; Neuwirth et al., 2021; Peper et al., 2021; Rajab & Soheib, 2021). More specifically, some commented on how unnatural it was to view themselves while speaking during WVC (Peper et al., 2021; Bedenlier et al., 2021), while others were more self-critical and worried about how they would be perceived by others (Castelli & Sarvary, 2021; Maimaiti et al., 2021; Neuwirth et al., 2021; Peper et al., 2021; Rajab & Soheib, 2021). It is interesting to note that most of the respondents who cited psychological reasons, including self-consciousness, fear, or shyness, were female (Castelli & Sarvary, 2021; Hosszu et al., 2021; Maimaiti et al., 2021; Rajab & Soheib, 2021). This is significant as it aligns with Costa (2020), a trauma and online learning expert, who stressed that there were more mental health impacts for females, especially those with previous trauma. Moreover, Fauville et al. (2021) asserted that women experienced Zoom fatigue more frequently. All in all, due to the sensitive nature of these reasons for not using webcams, students may be less inclined to be forthcoming about the challenges they are experiencing. As a result, this may lead to assumptions being drawn by teachers that a lack of student webcam use equates to unmotivated, disinterested, or disengaged students.

Admittedly, teachers cannot always verify exactly why students choose to keep webcams off; in fact, reasons can stem from a plethora of factors, such as peer pressure (Castelli & Sarvary, 2021; Dennen et al., 2021; Gherheş et al., 2021; Maimaiti et al., 2021), a desire to multi-task (Castelli and Sarvary, 2021; Dennen et al., 2021; Gherheş et al., 2021), or the need to disappear altogether. For instance, some students voiced concerns related to internet connectivity issues (Hosszu et al., 2021; Peper et al., 2021; Maimaiti et al., 2021; Rapanta et al., 2020) or privacy (Bedenlier et al., 2021; Day & Verbiest, 2021; Castelli & Sarvary, 2021; Gherheş et al., 2021; Gilmour, 2021; Hosszu et al., 2021; Neuwirth et al., 2021; Peper et al., 2021; Rajab & Soheib, 2021), yet there may have been cases in which they were actually self-conscious of their lower socioeconomic

status, fearful of being judged, or simply unmotivated. As an example, 75% of the students in Gherheş et al. (2021) who reported not using their webcams due to privacy concerns did not specify any workspace concerns. This may be an indication there were additional reasons not mentioned during their study. In fact, Gherheş et al. (2021) did not explain these contradictory results, nor did they extrapolate on possibilities. Therefore, utilizing qualitative methods, such as follow-up interviews or focus groups, could help researchers delve into this area more deeply.

Another reason uncovered for student webcam non-use was related to ongoing technical issues, including internet connectivity problems, limited bandwidth, or devices that were not convenient for webcam use, such as cell phones. Even so, Bedenlier et al. (2021) hypothesized that these commonly used technical issues may fall short of explaining the real reasons for a lack of webcam use. It can be argued that as technology advances, problems related to internet connectivity will gradually decline, making it easier for students to use webcams without interruptions due to limited bandwidth. Furthermore, as the e-learning industry continues to grow, so will the expectations for its flexibility, accessibility, and convenience. This means that students may prefer to use the cellphones more often for their synchronous classes, so teachers may be expected to accommodate them accordingly. Realistically, gaining true insight into participants' responses will remain challenging.

4.2 Q.2. Impacts on Teachers' Self-Efficacy, Engagement, and Wellbeing

As for the second research question, very little research was found that directly or indirectly discussed the effects of student webcam use on teachers' self-efficacy, engagement, and overall well-being. Of the 12 articles reviewed on student webcam use, around half of them addressed the impacts on teachers' self-efficacy (Castelli & Sarvary, 2021; Gilmour, 2021; Huang et al., 2022; Hosszu et al., 2021; Maimaiti et al., 2021; Neuwirth et al., 2021) and engagement (Bonanomi et al., 2021; Castelli & Sarvary, 2021;

Gherheş et al., 2021; Huang et al., 2022; Hosszu et al., 2021) and only three mentioned teacher wellness (Bonanomi et al., 2021; Hosszu et al., 2021; Rapanta et al., 2020). Thus, the lack of empirical data was the most significant finding.

Since an extensive review of the literature only uncovered limited research on the impacts of student webcams on teachers, additional moderating variables were included as having potential impacts on teachers. The goal was to explore any correlations that could directly or indirectly affect teachers' engagement, self-efficacy, and/or wellness in an online environment. For perceived student engagement, several studies mentioned that TE correlated with whether or not they believed their students were emotionally engaged, motivated, attentive, and actively participating (Bonanomi et al., 2021; Chu et al., 2021; Hosszu et al., 2021; Huang et al., 2022; Kershaw et al., 2021; Obrad & Circa, 2021; Peper et al., 2021; Rapanta & Soheib, 2021). However, when teachers could not see their students, they may perceive them to be disengaged (Day & Verbiest, 2021). As for how perceived organizational support could impact teachers' overall well-being, several studies discussed that the level of support a teacher received, such as training for online facilitation, could positively or negatively affect teachers' job satisfaction and/or resilience to stress while teaching online (Bonanomi et al., 2021; Chu et al., 2021; Huang et al., 2022; Kershaw et al., 2021; Obrad & Circa, 2021; Rajab & Soheib, 2021; Rapanta et al., 2020). Lastly, several studies discussed how teachers perceived their relationships with students and how this could either help or hinder their efforts to connect with students and communicate effectively (Chu et al., 2021; Gherheş, et al., 2021; Peper et al., 2021; Obrad & Circa, 2021; Rapanta et al., 2020).

It is important to note that a teacher's role in the online classroom can be much different than in the traditional one, which can potentially lead to additional challenges. Teachers often utilize numerous facilitation and discussion strategies, monitor the chat box, manage ongoing technological issues, and organize collaborative group activities in

breakout rooms, all while ensuring students are engaged and participating throughout. These expectations do not even include all the duties teachers attend to outside of the synchronous class, including replying to student emails and discussion board posts promptly, designing and assessing student assignments and tests, and providing personal feedback and timely grading. Not only are teachers expected to juggle these various obligations, but they often need to do so without ever seeing their students' faces. In light of these ongoing challenges, it is crucial that teachers feel pedagogically and technically competent to better manage their online classes (Chu et al., 2021; Huang et al., 2022; Rapanta & Soheib, 2021). Moreover, when considering the additional burden of balancing both work and home life, while also coping with the ongoing stress of a global pandemic, the cost to teachers' overall mental health and well-being cannot be discounted.

Many studies acknowledged the value and importance of non-verbal communication when relaying the entirety of a message (Castelli & Sarvary, 2021; Gilmour, 2021; Hosszu et al., 2021; Huang et al., 2022; Maimaiti et al., 2021; Neuwirth et al., 2021). Overall results revealed that when teachers were able to see their students' non-verbal communication during synchronous classes, they had increased work engagement, self-efficacy, and well-being. This was because teachers were able to gauge students' levels of engagement, participation, and comprehension, which aided teachers in managing their approach accordingly (Castelli & Sarvary, 2021; Gilmour, 2021; Hosszu et al., 2021; Neuwirth et al., 2021; Maimaiti et al., 2021). However, without student webcam use, teachers experienced lower work satisfaction, motivation, and emotional engagement (Bonanomi et al., 2021; Castelli & Sarvary, 2021; Gherheş et al., 2021; Huang et al., 2022; Hosszu et al., 2021).

Bandura's Self-Efficacy theory (1997) can help demonstrate how competent a teacher may feel or not feel performing the various facets of their job. If teachers are

57

struggling with their online classes or feel ill-equipped to manage effectively, it can eventually increase their stress levels. This may then seed self-doubt or perceptions of incompetence in their abilities or detract from their enjoyment of online teaching. On the other hand, teachers that have higher self-efficacy may experience lower levels of stress and thus be more inclined to persevere through challenges that may arise in their online environment. Thus, TSE is an important theoretical concept to consider when addressing online teaching, especially during the coronavirus pandemic.

Furthermore, the theory of Work Engagement (Schaufel et al., 2006) can be used to help illustrate the importance of teacher engagement when faced with challenges while teaching online. For instance, when teachers feel absorbed, passionate, and engaged in their job, they will be more mentally resilient, energetic, and dedicated to dealing with any challenges that might occur while teaching (Schaufel et al., 2006). On the other hand, teachers will be less effective in managing their online classes if they feel emotionally and psychologically distant from their students (Schaufel et al., 2006).

In addition to the importance of TSE and engagement, wellness can be measured through the lens of the Subjective Well-Being theory (Diener, 1984). For teachers, their wellness can be measured subjectively and can stem from the degree of work satisfaction from teaching online. Moreover, in addition to subjective well-being being static, it can also be changeable, depending on the situation. Therefore, teachers who feel a sense of disconnect between themselves and their students while teaching online may not derive a positive affect from such an environment, especially if they consider it to be an ongoing problem. Moreover, a teacher's subjective well-being can be affected by the perceived sense that they are unable to accomplish their goals to foster connections and engage students online.

Thus, a lack of student webcams was found to negatively impact teachers' engagement, self-efficacy, and wellness. Teachers also voiced concerns about the lack of

58

control to monitor their students' activities or ensure they were paying attention (Hosszu et al., 2021). This raised trust issues as teachers were not sure if their students were being honest about turning on their webcams. However, other studies highlighted the teacher's role was to create an inclusive, collaborative, and engaging learning environment without pressuring students to turn on their cameras (Castelli & Sarvary, 2021; Day & Verbiest, 2021; Gilmour et al., 2021).

While only Peper et al. (2021) directly mentioned Zoom fatigue, it could have played a part in participants' decision to not use webcams. Conversely, it can be argued that when students turn their cameras off during WVC, they essentially decrease the likelihood of developing Zoom fatigue because it removes the obligation or pressure to be alert, concentrate, or participate. However, this does not solve the fact that not only are teachers faced with the inability to see their students, but they are also subjected to the risk of developing WVC fatigue while using their webcams during lessons. This means that the negative effects of WVC on teachers could be twofold. On one hand, they are subjected to students' black boxes, and on the other, they must deal with the personal psychological impacts of viewing themselves on camera. Despite this, only Castelli & Sarvary (2021) and Hosszu et al. (2021) briefly mentioned the impacts of student webcam non-use on teachers, with none discussing the psychological effects of webcam use on teachers, such as feelings of self-consciousness or negative self-judgment. Thus, considering the trend for limited webcam use among students, more in-depth study and analysis is needed, especially since many teachers are still choosing to use their webcams.

Based on Moore's theory of transactional distance (1993), when students choose not to use their webcams during synchronous classes, the likelihood of perceived distance amongst participants will be greater. Furthermore, this perception of separation between teachers and students may further exacerbate psychological and communication

gaps and thus lead to an increase in misunderstandings and hinder the overall flow of communication (Moore, 1991). Also, if teachers are using their webcams but students are not, the psychological impacts of the previously discussed phenomenon of Zoom fatigue (Bailenson, 2021) can widen this gap even further. Dennen et al. (2021) purported that WVC meetings in which individuals do not use their webcams are not much different from talking on the phone with others. However, during WVC, it can be argued that the perceived distance is much greater when one person is using their webcam and speaking with others who are not. Perhaps it is the black box itself that represents a visual void or disconnect, resulting in the perceived notion by webcam users that non-users are consciously withholding something from them. Consequently, if participants believe the black box symbolizes a void or that others are hiding something, such as participation or effort, it may further contribute to the perceived disconnect and additional layers of distance. Moreover, such a situation may potentially lead to distrust, suspicion, and communication barriers, which can further pose obstacles to fostering a learning community. In addition, since social cohesion stems from an atmosphere that is conducive to emotional engagement and a sense of belonging for students, perceived distance in an online environment may lead to challenges in genuinely connecting with others. However, obligating or forcing students to turn their cameras on can cause emotional obstacles to learning or concentrating, which may be detrimental to learning and social cohesion. Despite these important considerations, there have been no studies that focus on the psychological impacts that these black boxes might have on teachers. Thus, this area of research needs to be explored extensively.

A disconnect may also occur if listeners are not demonstrating the behaviours or non-verbal communication that would indicate their attentiveness to speakers. For example, if teachers cannot discern that students are actively listening or engaged during synchronous lessons, with or without webcams, they may perceive them to be

inattentive, unmotivated, or even absent. It can also impede the overall flow of communication and interactions with others (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Day & Verbiest, 2021; Dennen et al., 2021; Gherheş et al., 2021). As a result, teachers may begin doubting their abilities or efficacy as online teachers. This supports recent research which outlines the potentially exhausting nature of WVC in that participants must expend more effort when trying to encode messages, both verbally and non-verbally (Bailenson, 2021; Nadler, 2020; Fauville et al., 2021; Lee, 2020).

4.3   Significance of Findings

Overall, there were several significant findings found in the literature. First, it must be noted that there is limited data on student webcam use in HE and even less that examines its impact on instructors since the start of the pandemic in 2020. This is important to highlight for several reasons. First, the shift to online learning at the beginning of the COVID-19 lockdowns literally happened overnight. Consequently, the studies conducted during this time could have been influenced by confounding variables. More specifically, the additional strain of dealing with a pandemic or issues related to increased isolation due to lockdowns could reduce the internal validity of these studies. Furthermore, a limited number of empirical studies were conducted within a short span of fewer than two years, thus reducing their overall reliability. Accordingly, there is a need for more longitudinal research because it will help bring to light what has transpired since HE underwent a massive shift online. More specifically, analyzing attitudes toward webcams when teachers and students first shifted online compared to several years later will give a more accurate assessment of whether the situation is improving or not. Also, there are no quantitative or qualitative studies solely conducted in colleges or universities in Canada. In fact, all of the empirical studies reviewed investigated university student bodies, including graduate students, outside of Canada, such as Germany (n=1), the United States (n=4), China (n=2), Romania (n=3), and

Saudi Arabia (n=2). Therefore, it cannot be assumed that attitudes towards webcams and engagement would be the same across the globe or even among different student populations within the same country or culture. Hence, the generalizability of these studies may be limited when drawing parallels with student populations from different countries. Lastly, there are very few empirical studies exploring whether lower teacher engagement and self-efficacy are the result of non-webcam use among students, or whether teachers can effectively engage students without the ability to see them.

Furthermore, it is important to consider that the participant's demographics, such as age, culture, or geographical location may or may not affect a study's generalizability, transferability, construct validity, and/or inter-rater reliability (Goodwin & Goodwin, 2017). For example, a study conducted in a North American university or college may be more culturally diversified than in other countries like China, Romania, or Saudi Arabia, and this can have fundamental impacts on the results. Therefore, drawing parallels between studies conducted in different cultures or with less student diversity may not be accurate. To illustrate, over 60% of the respondents in various studies were female and from different countries, including the United States (Castelli & Sarvary, 2021), Romania (Hosszu et al., 2021), and Saudi Arabia (Maimaiti et al., 2021; Rajab & Soheib, 2021), so culturally established norms related to gender may have played a role in anxiety stemming from webcam use. In other words, the results from these studies may or may not have aligned with the participants' demographics. Moreover, attitudes towards socio-economic concerns, digital equity, privacy, or social norms may also vary from culture to culture, as well as from one student demographic to another. Thus, drawing correlations between studies conducted in different countries is not advisable.

Also, teachers' or students' attitudes towards online learning and/or webcam use may vary, depending on the location of the study. To illustrate, Canada and the United

States are considered to have predominantly individualistic cultures that place more emphasis on student-centred learning; however, collectivist cultures, such as China, Romania, or Saudi Arabia, are more teacher-centred (Pham, 2011). Therefore, the construct of engagement may be operationalized differently, depending on the culture (Goodwin & Goodwin, 2017). To illustrate, online teachers from a Canadian university might perceive students to be engaged only if they are actively participating and collaborating with others during synchronous classes. Consequently, teachers' expectations for student webcam use would be greater. However, it may be considered acceptable or expected for teachers from a Chinese university to lecture more and interact less with students. Therefore, this could lead to less camera use during classes since students are required to play much less of an active role than their Canadian counterparts. This aligns with Chu et al. (2021), where students across Hong Kong did not consider the quality of their online interactions with teachers to impact their attitudes toward learning or their overall satisfaction with online classes. Therefore, Chu et al. (2021) highlighted that instead of teachers trying to focus on increasing student engagement, time would be better spent on solving student problems or improving course content delivery. However, the study did not outline if teachers struggled with student engagement due to a lack of webcams, nor did it discuss whether the lack of student engagement negatively impacted teachers' overall well-being. Moreover, it can be argued that the suggestions posed by Chu et al. (2021) indicated that the most important factor was student engagement, irrespective of whether or not teachers were engaged as well. It is important to note that just because students deem their interactions with teachers less valuable does not mean that teachers feel the same way. Such a misperception may result in students not feeling it necessary to use their webcams. As a result, if teachers are expecting to establish a meaningful relationship with their students but cannot even see them, they may be negatively affected by a lack of

student webcam use. Moreover, considering the multicultural landscape of many student populations in HE, it can be argued that, depending on the student and/or culture, their attitudes towards webcams may be different as well.

4.4   Limitations

The initial plan of this paper was to focus on reviewing literature in North America, but there was limited data on student webcam use in HE and even less on its impact on instructors since the start of the pandemic. Therefore, the inclusion criteria was expanded to incorporate studies conducted globally with the acknowledgment that, depending on the country, cultural differences may exist towards webcams as well as expectations regarding teacher-student dynamics. Furthermore, studies conducted in high school and K-12 (Hosszu et al., 2021; Obrad & Circa, 2020), as well as ones that focused on educators, (Bonanomi et al., 2021; Dennen et al., 2021; Kershaw et al., 2021) were included because study results were similar to those conducted on HE students. Finally, the decision was made to include non-empirical studies, such as commentaries and perspective-based literature, as they provided additional insight and valuable background information.

4.5   Implications and Recommendations

To conclude, a review of the emerging literature on student webcam use and its effects on teachers in an online environment has revealed a divide. On one hand, teacher self-efficacy and engagement are positively impacted when they can see their students (Bonanomi et al., 2021; Castelli & Sarvary, 2021; Gherheş et al., 2021; Gilmour, 2021; Hosszu et al., 2021; Huang et al., 2022; Maimaiti et al., 2021; Neuwirth et al., 2021). Teachers also perceived their relationships to be closer and more enriched when students used their webcams (Castelli and Sarvary, 2021; Huang et al., 2022). On the other hand, even though students from various studies similarly felt that webcams helped them foster relationships and collaborate, many voiced concerns about using

their webcams during online classes (Bedenlier et al., 2021; Castelli & Sarvary, 2021; Day & Verbiest; Dennen et al., 2021; Gherheş et al., 2021; Gilmour, 2021; Hosszu et al., 2021; Maimaiti et al., 2021; Neuwirth et al., 2021; Peper et al., 2021; Rajab & Soheib, 2021; Rapanta et al., 2020). Moreover, webcam use did not guarantee increased student engagement, comfort levels, or participation, but the literature demonstrated that less student webcam use may lead to lower student engagement in higher education. Similarly, it is important to consider that encouraging students to use their webcams can have further implications. In fact, encouragement may easily turn into pressure, and this could trigger privacy concerns among students.

Furthermore, a significant gap found in the literature was that none of the reviewed studies discussed whether teachers could effectively engage students without seeing them, nor did they discuss any long-term ramifications for teachers. Teachers who do not truly know why their students are not using their webcams may feel disconnected and discouraged while teaching online, which may impact their teaching performance. Moreover, when teachers feel unable to manage this disconnect, believe its unachievable, or perceive a lack of support from their organizations, it can further dissolve their self-efficacy, overall work engagement, and motivation. Consequently, without the ability to see students during synchronous classes, teachers might feel less efficacious or engaged, which can have profound consequences for their overall well-being. Ultimately, this will affect student and school outcomes on a larger scale.

The overnight surge of online learning and teaching that the field of education experienced in 2020 will most likely remain a mainstay in higher education. While web video conferencing platforms like Zoom have the potential to offer students and teachers many advantages, if webcams are not utilized, there will be limitations to these benefits. Furthermore, there still remain fundamental communication differences when compared with face-to-face interactions, and these differences may serve as obstacles to truly

humanizing this digital medium (Bailenson, 2021). Moreover, variations in student

bodies, cultures, attitudes, or established social norms may dissuade students from using

their webcams and have further implications in higher education. Regardless of these

differences, more research is needed to examine the long-term effects on teachers if

higher education is relying on e-learning to remain a viable option going forward.

REFERENCES

Aboagye, E., Yawson, J. A., & Appiah, K. N. (2021). COVID-19 and E-learning: The

challenges of students in tertiary institutions. *Social Education Research*, 2(1) 1

8. https://doi.org/10.37256/ser.212021422

Adedoyin, O. B., & Soykan, E. (2020). Covid-19 pandemic and online learning: The

challenges and opportunities. *Interactive Learning Environments*, 1–13.

https://doi.org/10.1080/10494820.2020.1813180

Ahmad, M. S., Iqbal, M. W., Abid, M., Tabassum, N., Shahzad, S. K., Mian, N. A., &

Naqvi, M. R. (2020, December 28). Usability Evaluation of Online Educational

Applications in COVID-19. *Lahore Garrison University Research Journal of*

Computer Science and Information Technology, *4*(4), 86–95.

https://lgurjcsit.lgu.edu.pk/index.php/lgurjcsit/article/view/117

Anderson, T. (2011). Teaching in an online learning context. In T. Anderson (Ed.), The

theory and practice of online learning. 2nd Edition. 343–366. Edmonton:

Athabasca University Press.

Andrews, F. M., & Withey, S. B. (1976). *Social indicators of well-being: America's*

perception of life quality. New York: Plenum Press.

Armstrong, R. L. (2022, August 1). *Internet Speeds for Remote Workers and Video*

Conferencing. HighSpeedInternet.com. Retrieved September 17, 2022, from

https://www.highspeedinternet.com/resources/how-much-internet-speed-to-

work-from-home+

Bedenlier, S., Wunder, I., Gläser-Zikuda, M., Kammerl, R., Kopp, B., Ziegler, A., &

Händel, M. (2021). "Generation invisible?. Higher Education Students' (Non)Use

of Webcams in Synchronous Online Learning. *International Journal of*

Educational Research Open, *2*, 100068.

https://doi.org/10.1016/j.ijedro.2021.100068

Burns, D., Dagnall, N., & Holt, M. (2020, October 14). Assessing the Impact of the

COVID-19 Pandemic on Student Wellbeing at Universities in the United

Kingdom: A Conceptual Analysis. *Frontiers in Education*, *5*.

https://doi.org/10.3389/feduc.2020.582882

Chu, A., Liu, C., So, M., & Lam, B. (2021, April 30). Factors for Sustainable Online

    Learning in Higher Education during the COVID-19 Pandemic. *Sustainability*,

    13(9), 5038. https://doi.org/10.3390/su13095038

Bahna, S. J. (2022). *"zoom-bie nation": Higher education faculty attitudes and concerns*

    using video conferencing for remote instruction during COVID-19 | Dissertation

    Abstracts International Section A: Humanities and Social Sciences; 83(10-A):

    No Pagination Specified, 2022. | APA PsycInfo. Retrieved July 20, 2022, from

    https://pesquisa.bvsalud.org/global-literature-on-novel-coronavirus-2019-

    ncov/resource/pt/covidwho-1989335

Bailenson, J. (2020, April 4). *Why Zoom Meetings Can Exhaust Us*. WSJ. Retrieved

    April 20, 2022, September 20, 2022, from https://www.wsj.com/articles/why-

    zoom-meetings-can-exhaust-us-11585953336

Bailenson, J. N. (2021, February 23). Nonverbal overload: A theoretical argument for the

    causes of Zoom fatigue. *Technology, Mind, and Behavior*, *2*(1).

    https://doi.org/10.1037/tmb0000030

Bandura, A. (1997) Self-Efficacy: The Exercise of Control; W.H. Freeman and Company,

    New York, 1997

Bond, M., Bedenlier, S., Marín, V. I., & Händel, M. (2021, August 30). Emergency remote

    teaching in higher education: mapping the first global online semester.

    International Journal of Educational Technology in Higher Education, *18*(1).

    https://doi.org/10.1186/s41239-021-00282-x

Castelli, F. R., & Sarvary, M. A. (2021, January 10). Why students do not turn on their

    video cameras during online classes and an equitable and inclusive plan to

    encourage them to do so. *Ecology and Evolution*, *11*(8), 3565–3576.

    https://doi.org/10.1002/ece3.7123

Cerveny, L. (2021). *Teacher stress in response to the COVID-19 outbreak in the spring of*

    2020 | Dissertation Abstracts International: Section B: The Sciences and

    Engineering; 82(7-B): No Pagination Specified, 2021. | APA PsycInfo. Retrieved

    September 20, 2022, from https://pesquisa.bvsalud.org/global-literature-on-

    novel-coronavirus-2019-ncov/resource/en/covidwho-1196235

Chaney, A. L. (2016). *Predicting burnout among online post-secondary instructors*

    from personal and professional factors, and perceived organizational

    support (Doctoral dissertation, Capella University).

Cooper, L. (2021, December 14). *Class-Zoom Fatigue - Age of Awareness*. Medium.

    Retrieved February 27, 2022, from https://medium.com/age-of-awareness/class-

    zoom-fatigue-45f8dc223819

Costa, K. (2020, May 27). *Cameras Be Damned*. Retrieved June 30, 2022, from

    https://www.linkedin.com/pulse/cameras-damned-karen-costa

Cross, T., & Polk, L. (2018, December). Burn Bright, Not Out: Tips for Managing Online

    Teaching. *Journal of Educators Online*, *15*(3).

    https://doi.org/10.9743/jeo.2018.15.3.1

Davis, F. D. (1989, September). Perceived Usefulness, Perceived Ease of Use, and User

    Acceptance of Information Technology. *MIS Quarterly*, *13*(3), 319.

    https://doi.org/10.2307/249008

Day, J., & Verbiest, C. (2021). Lights, Camera, Action? A Reflection of Utilizing Web

    Cameras during Synchronous Learning in Teacher Education. Teacher Educators'

    Journal, 14, 3-21. https://eric.ed.gov/?id=EJ1296278

Dean, B. (2022, January 6). *Zoom User Stats: How Many People Use Zoom in 2022?*

    Backlinko. Retrieved May 2, 2022, from https://backlinko.com/zoom-users

Dennen, V. P., Word, K. D., & Arslan, Ö. (2021). Webcams at work: A survey of learning

    professionals' practices and perceptions. Retrieved from

https://diginole.lib.fsu.edu/islandora/object/fsu:763399

Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, *95*(3), 542–575.

https://doi.org/10.1037/0033-2909.95.3.542

Diener, E., & Fujita, F. (1995). Resources, personal strivings, and subjective well-being: A

nomothetic and idiographic approach. *Journal of Personality and Social*

Psychology, *68*(5), 926–935. https://doi.org/10.1037/0022-3514.68.5.926

Diener, E., & Larsen, R. J. (1984). Temporal stability and cross-situational consistency of

affective, behavioral, and cognitive responses. *Journal of Personality and Social*

Psychology, *47*(4), 871–883. https://doi.org/10.1037/0022-3514.47.4.871

Donnelly, R., & Patrinos, H. A. (2021, November 10). Learning loss during Covid-19: An

early systematic review. *PROSPECTS*. https://doi.org/10.1007/s11125-021-

09582-6

Döring, N., Moor, K. D., Fiedler, M., Schoenenberg, K., & Raake, A. (2022, February 12).

Videoconference Fatigue: A Conceptual Analysis. *International Journal of*

Environmental Research and Public Health, *19*(4), 2061.

https://doi.org/10.3390/ijerph19042061

Di Pietro, G., Biagi, F., Costa, P., Karpiński, Z., Mazza, J., European Commission. Joint

Research Centre, & Europäische Kommission Gemeinsame Forschungsstelle.

(2020). *The Likely Impact of COVID-19 on Education: Reflections Based on the*

Existing Literature and Recent International Datasets. UTB.

Eydman, M. (2018, July 9). *How to Adopt New Technology - Michael Eydman*. Medium.

Retrieved June 20, 2022, from https://medium.com/@meydman/how-to-adopt-

new-technology-efca6887b50c

Farhad, S. (2014, April 21). *Introduction to Distance Education: Theorists and Theories*

–Michael G. Moore. Distance-Educator.com. Retrieved September 20, 2022,

from https://distance-educator.com/introduction-to-distance-education-theorists-and-theories-michael-g-moore/

Fauville, G., Luo, M., Queiroz, A., Bailenson, J., & Hancock, J. (2021, August). Zoom Exhaustion & Fatigue Scale. *Computers in Human Behavior Reports*, *4*, 100119. https://doi.org/10.1016/j.chbr.2021.100119

Fernández-Batanero, J. M., Román-Graván, P., Reyes-Rebollo, M. M., & Montenegro-Rueda, M. (2021, January 11). Impact of Educational Technology on Teacher Stress and Anxiety: A Literature Review. *International Journal of Environmental Research and Public Health*, *18*(2), 548. https://doi.org/10.3390/ijerph18020548

Gallagher, S., & Palmer, J. (2020, September 29). *The Pandemic Pushed Universities Online. The Change Was Long Overdue*. Harvard Business Review. Retrieved June 20, 2022, from https://hbr.org/2020/09/the-pandemic-pushed-universities-online-the-change-was-long-overdue.

Gherheş, V., Şimon, S., & Para, I. (2021, March 15). Analysing Students' Reasons for Keeping Their Webcams on or off during Online Classes. *Sustainability*, *13*(6), 3203. https://doi.org/10.3390/su13063203

Goodwin, K. A., & Goodwin, C. J. (2017). *Research in psychology: Methods and designs* (8th ed.). Hoboken, NJ: John Wiley & Sons.

Hosszu, A., Rughiniş, C., Rughiniş, R., & Rosner, D. (2022, January 10). Webcams and Social Interaction During Online Classes: Identity Work, Presentation of Self, and Well-Being. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.761427

Huang, S., Yin, H., Jin, Y., & Wang, W. (2022, April 7). More Knowledge, More Satisfaction with Online Teaching? Examining the Mediation of Teacher Efficacy

and Moderation of Engagement during COVID-19. *Sustainability*, *14*(8), 4405.

https://doi.org/10.3390/su14084405

Joshi, O., Chapagain, B., Kharel, G., Poudyal, N. C., Murray, B. D., & Mehmood, S. R.

(2020, February 12). Benefits and challenges of online instruction in agriculture

and natural resource education. *Interactive Learning Environments*, 1–12.

https://doi.org/10.1080/10494820.2020.1725896

Kivunja, C. (2018, December 3). Distinguishing between Theory, Theoretical Framework,

and Conceptual Framework: A Systematic Review of Lessons from the Field.

International Journal of Higher Education, *7*(6), 44.

https://doi.org/10.5430/ijhe.v7n6p44

Lee, J. (2020). A neuropsychological exploration of Zoom fatigue. *Psychiatric Times, 17*.

Retrieved June 20, 2022, from

https://www.psychiatrictimes.com/view/psychological-exploration-zoom-fatigue

Loose, C. C., & Ryan, M. G. (2020, November 11). Cultivating Teachers When the School

Doors Are Shut: Two Teacher-Educators Reflect on Supervision, Instruction,

Change and Opportunity During the Covid-19 Pandemic. *Frontiers in Education*,

5. https://doi.org/10.3389/feduc.2020.582561

Ma, K., Chutiyami, M., Zhang, Y., & Nicoll, S. (2021, March 10). Online teaching self-

efficacy during COVID-19: Changes, its associated factors and moderators.

Education and Information Technologies, *26*(6), 6675–6697.

https://doi.org/10.1007/s10639-021-10486-3

Maimaiti, G., Jia, C., & Hew, K. F. (2021, October 6). Student disengagement in web-

based videoconferencing supported online learning: an activity theory

perspective. *Interactive Learning Environments*, 1–20.

https://doi.org/10.1080/10494820.2021.1984949

McConnon, A. (2021, March 9). *Zoom Fatigue: The Differing Impact on Introverts and Extroverts*. WSJ. Retrieved July 2, 2022, from https://www.wsj.com/articles/zoom-fatigue-the-differing-impact-on-introverts-and-extroverts-11615291202

Mehrabian, A., & Ferris, S. R. (1967). Inference of attitudes from nonverbal communication in two channels. *Journal of Consulting Psychology*, *31*(3), 248–252. https://doi.org/10.1037/h0024648

Mheidly, N., Fares, M. Y., & Fares, J. (2020, November 11). Coping With Stress and Burnout Associated With Telecommunication and Online Learning. *Frontiers in Public Health*, *8*. https://doi.org/10.3389/fpubh.2020.574969

Moore, M. G. (1991). Editorial: Distance education theory. American Journal of Distance Education, 5 (3), 1–6. 10.1080/08923649109526758.

Moore, M. G. (1993). Theory of transactional distance. In D. Keegan (Ed.), Theoretical principles of distance education (pp. 22–38). Routledge.

Munn, Z., Peters, M. D. J., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018, November 19). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology*, *18(1)*. https://doi.org/10.1186/s12874-018-0611-x

Murphy, M. P. A. (2020, April 30). COVID-19 and emergency eLearning: Consequences of the securitization of higher education for post-pandemic pedagogy. *Contemporary Security Policy*, *41*(3), 492–505. https://doi.org/10.1080/13523260.2020.1761749

Nadler, R. (2020, December). Understanding "Zoom fatigue": Theorizing spatial dynamics as third skins in computer-mediated communication. *Computers and Composition*, *58*, 102613. https://doi.org/10.1016/j.compcom.2020.102613

Neuwirth, L. S., Jović, S., & Mukherji, B. R. (2020, August 9). Reimagining higher

      education during and post-COVID-19: Challenges and opportunities. *Journal of*

      Adult and Continuing Education, *27*(2), 141–156.

      https://doi.org/10.1177/1477971420947738

Obrad, C. (2020, August 27). Constraints and Consequences of Online Teaching.

      Sustainability, *12*(17), 6982. https://doi.org/10.3390/su12176982

Okun, M. A., Stock, W. A., Haring, M. J., & Witter, R. A. (1984, September). Health and

      Subjective Well-Being: A Meta-Analyis. *The International Journal of Aging and*

      Human Development, *19*(2), 111–132. https://doi.org/10.2190/qgjn-0n81-5957-

      haqd

Peper, E., Wilson, V., Martin, M., Rosegard, E., & Harvey, R. (2021, March 29). Avoid

      Zoom Fatigue, Be Present and Learn. *NeuroRegulation*, *8*(1), 47–56.

      https://doi.org/10.15540/nr.8.1.47

Pham Thi Hong, T. (2011). Issues to consider when implementing student-centred

      learning practices at Asian higher education institutions. *Journal of Higher*

      Education Policy and Management, *33*(5), 519-528.

Pollock, A., & Berge, E. (2017, November 17). How to do a systematic review.

      International Journal of Stroke, *13*(2), 138–156.

      https://doi.org/10.1177/1747493017743796

Prifti, R. (2020, April 26). Self–efficacy and student satisfaction in the context of

      blended learning courses. *Open Learning: The Journal of Open, Distance and e-*

      Learning, *37*(2), 111–125. https://doi.org/10.1080/02680513.2020.1755642

Rajab, M. H., & Soheib, M. (2021, February 24). Privacy Concerns Over the Use of

      Webcams in Online Medical Education During the COVID-19 Pandemic. *Cureus*.

      https://doi.org/10.7759/cureus.13536

Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., & Koole, M. (2020, July 7). Online University Teaching During and After the Covid-19 Crisis: Refocusing Teacher Presence and Learning Activity. *Postdigital Science and Education*, *2*(3), 923–945. https://doi.org/10.1007/s42438-020-00155-y

Ribeiro, R. (2020, July 13). *How University Faculty Embraced the Remote Learning Shift*. Technology Solutions That Drive Education. Retrieved June 20, 2022, from https://edtechmagazine.com/higher/article/2020/04/how-university-faculty-embraced-remote-learning-shift

Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006, August). The Measurement of Work Engagement With a Short Questionnaire. *Educational and Psychological Measurement*, *66*(4), 701–716. https://doi.org/10.1177/0013164405282471

Serhan, D. (2020). Transitioning from face-to-face to remote learning: Students' attitudes and perceptions of using Zoom during COVID-19 pandemic. *International Journal of Technology in Education and Science (IJTES), 4*(4), 335-342

Skaalvik, E. M., & Skaalvik, S. (2007, August). Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout. *Journal of Educational Psychology*, *99*(3), 611–625. https://doi.org/10.1037/0022-0663.99.3.611

Sokal, L., Trudel, L. E., & Babb, J. (2020). Canadian teachers' attitudes toward change, efficacy, and burnout during the COVID-19 pandemic. *International Journal of Educational Research Open*, *1*, 100016. https://doi.org/10.1016/j.ijedro.2020.100016

Spicksley, K., Kington, A., & Watkins, M. (2021, August 20). "We Will Appreciate Each Other More After This": Teachers' Construction of Collective and Personal

Identities During Lockdown. *Frontiers in Psychology*, *12*.

https://doi.org/10.3389/fpsyg.2021.703404

Swanson, R. A., & Chermack, T. J. (2013, August 5). *Theory Building in Applied Disciplines (Publication in the Berrett-Koehler Organizational Performance (Paperback))* (1st ed.). Berrett-Koehler Publishers.

Tallent-Runnels, M. K., Thomas, J. A., Lan, W. Y., Cooper, S., Ahern, T. C., Shaw, S. M., & Liu, X. (2006, March). Teaching Courses Online: A Review of the Research. *Review of Educational Research*, *76*(1), 93–135.

https://doi.org/10.3102/00346543076001093

Tartavulea, C. V., Albu, C. N., Albu, N., Dieaconescu, R. I., & Petre, S. (2020b, August). Online Teaching Practices and the Effectiveness of the Educational Process in the Wake of the COVID-19 Pandemic. *Www.Amfiteatrueconomic.Ro*, *22*(55), 920.

https://doi.org/10.24818/ea/2020/55/920

Van Vegchel, N. (2005), "Two models at work: a study of interactions and specificity in relation to the demand-control model and the effort-reward imbalance model", dissertation thesis, Utrecht University, Utrecht.

Villani, L., Pastorino, R., Molinari, E., Anelli, F., Ricciardi, W., Graffigna, G., & Boccia, S. (2021, April 6). Impact of the COVID-19 pandemic on psychological well-being of students in an Italian university: a web-based cross-sectional survey. *Globalization and Health*, *17*(1). https://doi.org/10.1186/s12992-021-00680-w

Wahyuni, A. (2017). The Power of Verbal and Nonverbal Communication in Learning. In: s.n., 2018. Advances in Social Science, Education and Humanities Research (ASSEHR), vol.125. s.l.: Atlantis Press, 80-83.

Watkins, P. (2021). *How Did Remote Teaching during the COVID-19 Crisis Affect Faculty's Attitudes and Beliefs about Online Teaching?* Temple University.

http://dx.doi.org/10.34944/dspace/6520

World Health Organisation (2020). World Health Organisation. Joint ICAO- WHO

    Statement on COVID-19. World Health Organisation. Retrieved May 5, 2022,

    from https://www.icao.int/Security/COVID-19/Pages/Statements.aspx

Zheng, K., Ci, K., Cui, J., Kong, J., & Zhou, J. (2020, December 8). Non-Contact Heart

    Rate Detection When Face Information Is Missing during Online Learning.

    Sensors, *20*(24), 7021. https://doi.org/10.3390/s20247021

Zoom Video Communications (2022). Zoom system requirements: Windows, macOS,

    Linux. Zoom Support. Retrieved September 17, 2022, from

    https://support.zoom.us/hc/en-us/articles/201362023-Zoom-system-

    requirements-Windows-macOS-Linux

APPENDIX

Appendix A: *Overview of Literature Review Findings for RQ#1 and RQ#2*

Studies, Authors, Publication Year	Journal names	Participants/Age, grades/gender/geo-locations	Data collection methods	Data analysis methods	Research Question(s)	Major results
Generation invisible? Higher Education Students'(Non) Use of Webcams in Synchronous Online Learning. (Bedenlier et al., 2020)	International Journal of Educational Research Open	3,527 university students from five faculties and different levels of study from Germany (treatment n = 1,578) Mean age 23.6 years (SD = 4.7)	Online survey with three measurements (before, during, and after summer term of 2020)	Descriptive and correlative analyses; separate univariate analyses of (co)variance	1: How frequently do higher education students use their webcam in VC sessions? 2: How do higher education students perceive webcam use and do their perceptions differ with regard to their usage frequency? 3: How are course-related characteristics (i.e., group cohesion, communication, lecturer-student relationships) related to students' webcam use? 4: What student characteristics are related to the frequency of webcam use?	Female students, students of humanities, and MA students reported using webcams most. 22% never used webcams, 7% always used webcams, 71% varied webcam use
Prevalence and health correlates of Online Fatigue: A cross-sectional study on the Italian academic community during the COVID-19 pandemic. (Bonanomi et al., 2021)	The Public Library of Science	N=307 Italian academics aged 24–70 years old (mean age = 40.7; SD = 10.1) in Italy.	The online survey was conducted in December 2020.	A new tool (the Online Fatigue Scale) was developed, and its psychometric properties were evaluated.	Questionnaire included following themes: socio-demographic and job-related information, technology-related experience, health status, psychological well-being, COVID-related perceived distress	Fatigue associated with greater use of technology, female gender, and presence of minor children. - Participants reported greater frequency of psychosomatic symptoms, unhealthy habits, poorer psychological well-being, and greater Covid-related perceived distress.

Why students do not turn on their video cameras during online classes and an equitable and inclusive plan to encourage them to do so. (Castelli & Sarvary, 2021)	Ecology and Evolution	283 undergraduates at Cornell University (treatment n= 276; male, n=99; female, n=164)	End-of-semester Qualtrics online survey during last synchronous section meeting of the semester	Pairwise differences between demographic categories analyzed with two-tailed Fisher's exact tests	n/a	Main reasons n = 249 had webcams off - concern about appearance (n = 113), people being seen in background (n = 73)
Factors for Sustainable Online Learning in Higher Education during the COVID-19 Pandemic. (Chu et al., 2021)	Sustainability	400 full-time undergraduate students from 11 universities in Hong Kong (female, n=62.5%; male, n=37.5%); Convenient sample	Self-developed survey	Composite reliabilities and Cronbach's alphas >0.7	Primary objective - identify if there is a change of university students' learning attitude during the period of online delivery, and if their experience in the online environment could impact their overall interest in learning during the COVID-19 pandemic.	Peer interactions and course design significantly impacted students' attitudes. Importance of student interactions with instructors had insignificant findings
Lights, camera, action? A reflection of utilizing web cameras during synchronous learning in teaching education. (Day & Verbiest, 2021)	Teacher Educators' Journal	Personal reflections of doctoral students who were studying and teaching online + Literature review	n/a	n/a	What are the advantages of students turning on their web cameras? What are the disadvantages of expecting students to turn them on?	Advantages of webcams: a) reduces feeling of isolation for remote learners, b) remain accountable as an active listener c) facial expressions are visible d) allow a shift from virtual to in-person learning - Disadvantages: a) neglect to take students at face value b) does not aim for intercultural competence c) fails to consider equity and privacy issues
Analysing Students' Reasons for Keeping Their Webcams on or off during Online Classes. (Gherheş, et al., 2021)	Sustainability	Full-time students from all years of study from Politehnica University in Romania (treatment n= 407) Mean age = 20.5 Gender - n/a	Self-developed survey and anonymous online open-ended questionnaire	Analysis of frequencies in SPSS	n/a	The frequency of webcam use and comfort levels have risen since the start of pandemic, but enjoyment levels have remained flat. Webcams can enhance the meeting/ learning experience, but those in passive roles prefer webcams off to

						multitask. Webcams are off due to lack of familiarity with others, larger meeting size, physical appearance, and physical env't. Reciprocity may be force that leads to stronger webcam use norms.
Let's talk about webcams, and a pedagogy of kindness. (Gilmour, 2021)	Journal of Learning and Teaching	n/a	n/a	n/a	n/a	Educators need to consider the diversity of online students and complexities behind their choice to not use webcams. Not adopting a kinder and more understanding approach may exacerbate student inequalities.
Webcams and Social Interaction During Online Classes: Identity Work, Presentation of Self, and Well-Being. (Hosszu et al., 2021)	Frontiers in Psychology	Teachers and students in Romania, K-12 An initial study (N=9401 students, n=3265 teachers). Follow-up study (n=5372 students, n=2354 teachers) Majority were women from urban areas in Romania. 91% of student respondents were in high school	Qualitative content analysis of responses to open-ended questions in a large-scale survey of teachers and students in Romania	The number of words used by the respondents varied between 1 and 707. Findings analyzed based on three key concepts: overflow effects on well-being, identity work, and presentation of self	n/a	Students and teachers experienced ambivalence and diverse changes in well-being, generated by flexibility, burdens, and disruptions of school-from-home. Failure or success at the presentation of self in online situations is relevant for emotional valence of learning encounters, impacting well-being.
More Knowledge, More Satisfaction with Online Teaching? Examining the Mediation of Teacher Efficacy and Moderation of Engagement during COVID-19. (Huang et al., 2022)	Sustainability 2022	n=2763 university teachers in China (n=1047 - male teachers, n=1716 - female teachers) N=923 - less than 10 yrs experience, n=1506 - 10-30 yrs, n=334 - 30+ yrs	Quantitative - questionnaire survey	Cronbach's α coefficient	1) How do TPACK and work engagement contribute to university TSE & well-being and intention to use online teaching in the future? (2) Is there any interaction effect existing between TPACK and work engagement? and (3) Does TSE mediate the relationships between TPACK and teachers'	While ICT and pedagogical skills helped teachers to better manage online teaching, the most important predictor of TSE was WE

					well-being and future intention?	
Impact of Web-Based Meeting Platform Usage on Overall Well-Being among Higher Education Employees. (Kershaw et al., 2021)	European Journal of Investigation in Health, Psychology and Education	11 tutors and 22 BA students Tenured, tenure-track, or non-tenure-track faculty, staff and administrators, including male, female, and nonbinary individuals over 18 years old, at colleges/universities in U.S.	Self-developed survey	One-way ANOVA to compare effects of frequency of meetings using web-based meeting platforms /week and overall well-being of participants		A significant relationship was found between the instructor's pedagogical skills and students' engagement. Factors impeding online engagement: limited use of breakout rooms and webcams, lack of non-verbal cues; no incentive for online class participation
Student disengagement in web-based videoconferencing supported online learning: an activity theory perspective. (Maimaiti, et al., 2021)	Interactive Learning Environments	50 post-graduates in Faculty of Education in Saudi Arabia Convenient sample - one highly engaging class (treatment n=25, female, n=22) and one less engaging class (treatment n=22, female, n=20)	Self-reported engagement questionnaire and semi-structured individual interviews	Cronbach's alpha result for 14 engagement items was 0.89; Shapiro–Wilk test	1: To what extent did students engage in the two Web-based videoconferencing supported online courses? 2: What were the contradictions that led to students' disengagement with Web-based videoconferencing supported online courses?	Teachers' WE was mainly determined by their students' perceived engagement and motivation during learning
Reimagining higher education during and post-COVID-19: Challenges and opportunities. (Neuwirth et al., 2021)	Journal of Adult and Continuing Education	Undergraduate students at New York State University (enrolment at 5152 students)	Writers based article on own teaching experiences in New York city + literature review	n/a	How should faculty approach maintaining rigour and delivering quality education as well as support their students' ongoing ability to engage in meaningful, interactive educational activities in the context of a crisis such as this pandemic?	Students need guidance with online etiquette (e.g. learning the importance of active participation, turning webcams on, etc.). Faculty should design strategies to help students navigate these difficulties to optimize their distance learning.

Determinants of work engagement among teachers in the context of teleworking. (Obrad & Circa, 2021)	Amfiteatru Economic	400 Romanian teachers (primary, secondary, high-school and university) between March - June 2020	Quantitative research based on sociological inquiry - data collected through an online questionnaire	Descriptive univariate analysis, confirmatory factorial analysis (CFA), and structural equation modelling (SEM)	How important is the perceived student engagement in learning to their teachers and to what extent is this representation associated with a certain work engagement of teachers?	n=80% - harder to focus attention and stay present in online classes (94% had moderate to considerable difficulty with online learning). Suggestions made for students to overcome challenges online and use webcams more
Avoid Zoom fatigue, be present and learn. (Peper et al., 2021).	Neuro Regulation	Undergraduate university students (n=325) in the U.S.	Anonymous online survey comparing Zoom online learning with traditional in-person classes	n/a	n/a	91.5% were against webcam use for reasons including privacy (88.4%) and anxiety (64.4%)
Privacy Concerns Over the Use of Webcams in Online Medical Education During the COVID-19 Pandemic. (Rajab, & Soheib, 2021)	Curēus	319 preclinical/clinical medical students at Alfaisal University, a private not-for-profit institution (treatment n=80); median age =21 yrs (n=202, female, n=117, male)	Self-administered online questionnaire	Data management and analysis performed using Jamovi Software	n/a	Significant factors for successful online course delivery included providing effective learning design and establishing teacher presence
Online university teaching during and after the Covid-19 crisis: Refocusing teacher presence and learning activity. (Rapanta et al., 2020)	Postdigital science and education	4 teachers with expertise in online teaching and learning

Switzerland, Australia, Spain, and Canada | An exploratory study with expert interviews included five questions via email | Discussion synthesized common aspects that emerged from a set of answers | n/a | A significant relationship between teacher efficacy/attitudes toward change and POS/teacher resilience/BO at the onset of the pandemic |