The Use of Technology and Social Media during Covid-19 and The Effects on Students Mental Health

Is technology and social media, adding or alleviating the mental health effects of an online based learning environment during Covid-19?

By

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A research paper submitted to the University of Dublin, in partial fulfilment of the requirements for the degree of

Master of Science Interactive Digital Media

Supervised by Nina Bresnihan

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Abstract

This research paper explores the use of technology and social media during the period of the Covid-19 restrictions and the effects this has on student’s mental health. This paper aims to discover whether technology and social media are adding to or alleviating the mental health effects of social isolation, during a time where university classes are taking place online, with limited or no face-to-face interaction. It explores the benefits of online learning, as well as the disadvantages and limitations. It explores means of communication used by students, as well as use of social media and technology being used during difficult time, along with the effects of social isolation. Existing studies were explored in the form of a systematic literature review, as well as primary research in the form of a survey. It was found that technology and social media is both adding to and alleviating the mental health effects of an online based learning environment. It is adding to the mental health effects due to lack of face-to-face interaction with peers, as well as increased difficultly to collaborate with peers. Increased used of social media during this time is also contributing to increased anxiety and depression. However, it was also found that technology and social media is also alleviating the mental health effects during this time as technology allowed university classes and work to remain in place in the form of online classes. Communication tools such as Zoom, WhatsApp and social media platforms allowed students to stay in contact with family and friends and continue some normality in life during this time. In terms of future research, this study would benefit from a follow up study with the participants. As the Covid-19 pandemic is still on going, the exact picture of the effects of the restrictions has not yet emerged. A follow up study which compares the mental health effects of genders would also be beneficial.
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Chapter 1: Introduction

1.1 Covid-19 – A Global Crisis (Introduction and Background)
In the early days of December 2019, reports of patients falling ill with severe pneumonia were reported in the city of Wuhan, China. The number of cases began to rise and officials began to refer to the virus as the “2019 novel coronavirus” and later the World Health Organisation (WHO) named the illness caused by the virus the coronavirus disease 2019 or Covid-19. The virus quickly spread across the globe and on the 11th March 2020, the WHO declared the outbreak as a pandemic. (Sheposh, 2020). In Ireland, on February 29th, the first case of Covid-19 was reported. On March 12th Taoiseach Leo Varadkar TD announced the closure of all schools and third level institutions (Department of Education and Skills, 2020), where students were advised to take home books and learning materials and lectures and classes would be delivered online for the coming weeks in order to help stop the spread of the virus. The majority of the population were advised to work from home where possible and gatherings of any kind were cancelled for the foreseeable future in order to help stop the spread of the virus. Similar advice and restrictions were brought in by governments around the world. During this time, technology has played a very important role in allowing people to work and take classes from home, socialise without face-face contact and stay connected. We are living in a society where technology is ever changing and growing, and during this time technology is being utilised like never before. The aim of this paper is to explore the effects of this crisis on students and how taking classes from home, changes in use of technology and the use of social media during this time, and how it’s effecting student’s mental health.

1.2 Research Question
“Is technology and social media, adding or alleviating the mental health effects of an online based learning environment during Covid-19?”
This paper will give an overview on online learning, social media and mental health, social isolation and communicating during a pandemic. Further, this paper will explore existing studies in these areas using a systematic literature review, as well as primary research in the form of a survey. The results of these methods will then be discussed, followed by a discussion and conclusion, with the main objective of answering the outlined research question above.
Chapter 2: Background and Context

2.1 Introduction
This chapter will review existing literature on topics that will help me gain a better understanding of the research question at hand. Some of the topics include the history of learning online, the benefits, disadvantages and limitations. Social media and mental health, including what social media is, how people are using it and the effects it has on young people’s mental health. Due to the Covid-19 crisis, many people have been socially isolated. This chapter will review literature on what social isolation is, how this effects loneliness levels and what kind of effects this has on people’s mental health. Finally, this chapter will explore communicating with others during a pandemic, the tools people use and the effects of excess screen time. These topics will help gain a rich insight into answering the main research question. An array of databases was used to search for relevant papers to aid this review of literature. Some of the databases included Google Scholar, AMC Digital Library, SAGE Journals, Research Gate, JSTOR and TCD Library. Some of the search terms included; online learning mental health students Covid-19, advantages of online learning, social media usage, social media and students, social media and anxiety, Staying connected during a pandemic and loneliness during Covid-19.

2.2 Online Learning
Over the course of the past 20 years, there has been a huge rise in the number of students learning through web-based learning and blended learning environments. “The increase in online learning has been dramatic, both in terms of the number of subscribers to online courses as well as in the number of institutions offering curricula and degrees online” (Quan-Haase, A, 2005). This is due to the flexibility online courses offer and fit into the lifestyle of many who may have work or family commitments. As well as this, many higher-level institutions offer online courses to meet the demand of the growing learning population. There are many benefits to online learning, from both the student and institutes point of view. “Online learning appeals to a diverse population of students with ranging academic needs that traditional education classes are deficient or incapable of meeting” (Kim et al., 2005). Online learning can be synchronous or asynchronous where “the synchronous learning environment is structured in the sense that students attend live lectures, there are real time interactions between the educators and learners, and there is a possibility of instant feedback, whereas asynchronous learning environments are not properly structured” (Dhawan, 2020). Asynchronous learning is delivered in a different format such as pre-recorded videos.
As a result, online learning appeals to those who favour self-guided learning and working at a pace that is compatible with both their academic and personal needs. There are several more “advantages to online learning such as improving access to education and training, improving the quality of learning, reducing the cost and improving the cost-effectiveness of education”. Online learning gives an opportunity to those who may not be able to afford the high rent costs of living in cities or afford travel costs. Online learning also has benefits for colleges and institutes as it allows for inexpensive worldwide distributing and reaches a wider audience. Despite these advantages, there are also some disadvantages that come along with learning online. It can be argued that more self-discipline is required from students in an online setting, unlike “traditional classrooms” (Allen & Seaman, 2007). Students taking classes online rather than in a face-to-face setting experience a lack of interaction or relation. It may be harder to build relationships with fellow students and lecturers. In terms of explanations, clarifications and interpretations “the online learning method might be less effective than the traditional method of learning”. Online learning may also have a negative effect on student’s communication skills (Arkorful & Abaidoo, 2014). As well as this, online learning is not suitable for every field or discipline, as some courses, such as sciences, require practical lab work that cannot be done online.

As a result of Ireland in lockdown due to restrictions brought in by the government, college campuses across the country became deserted as a new era of online learning was brought in for courses that are normally delivered face-to-face. All campus events such as workshops, sporting activities, conferences along with other events are also to be delivered online where possible. This brought about, and is still bringing about, many challenges for university staff and students. Some of these challenges include problems with technology such as “downloading errors, issues with installation, login problems, problems with audio and video, and so on” (Dhawan, 2020). Other issues include students finding classes delivered online to be less engaging. As well as this online content can be very theoretical and does not allow for students to put what they’ve learned into practice. Students may also be in living conditions that aren’t suitable for engaging in classes. With the closure of schools and the government recommendation to work from home, households may be full with limited space to carry out self-directed learning. “This wholesale shift to online learning will also be more difficult for students who are sheltering in places that are less optimal and more physically and psychologically confining and are perhaps not very conducive to learning and performance” (Besser, 2020).

The move to an online environment has also brought about psychological effects for students. Lack of contact with peers, as well as the anxiety as a result of the public
health crisis. According to a study by Pragholapati (2020), 24.9% of students experienced anxiety because of the Covid-19 outbreak. Furthermore, depression levels “increased significantly” amongst students.

2.3 Social Media and Mental Health
Social media is at the forefront of all our lives with the ubiquity of mobile technology and the ease of access to social media apps at the touch of a finger. Social media, or ‘Web 2.0’ has become more than just a median to share content on, but also a means of communication for many people to communicate in real time with friends, family and even online friends. It’s a source of entertainment, and a way to connect businesses to customers, explore interests and ideas, make friends with like-minded people and reconnect with old friends and relatives. “Social media employ mobile and web-based technologies to create highly interactive platforms via which individuals and communities share, co-create, discuss, and modify user-generated content” (Kietzmann et al., 2011). Every day, thousands of students are spending hours upon hours on social media sites such as Instagram, Facebook, Snapchat and TikTok to name a few, scrolling through pictures and videos, absorbing content. To many, this amount of exposure to social media may seem like a “waste of time, however, it also helps students to develop important knowledge and social skills and be active citizens who create and share content” (Wang et al., 2011). Social media, especially Facebook, has become a valuable resource for students as a means of communication for sharing ideas and collaborating with other students for projects. “If social media is used in a positive way, it can help students and youth to get the knowledge that can be used to improve their academic performances” (Mushtaq, 2018).

Throughout the Covid-19 restrictions, social media is particularly important for students in higher education in order to connect and create a virtual student community, as many students who began a course in the latter half of 2020, may not have had the opportunity to meet their peers in a face-to-face setting. “A community can be created locally for a particular class, beyond the boundary of a single classroom, for the university or even beyond the campus using a virtual world” (Roebuck et al., 2013). Furthermore, connecting with peers on social media allows for opportunities to discuss class content, collaboration and relationship building on the go. “Mobile devices provide learners opportunities to collaborate, discuss content with classmates and instructors, and create new meaning and understanding” (Gikas & Grant, 2013).

Social media is a very powerful tool and a prominent part of today’s society that encompass a lot of advantages as outlined above, but it also has a variety of
disadvantages that can be impactful on one’s mental health. Today, online social interactions don’t just consist of text-based exchanges, but also is subject to image, video and other multimedia exchanges. Social media can be a place where cyberbullying and unsolicited hateful comments and messages can be posted and received. “Social media directly causes stress, depression, low self-esteem and suicidal ideation … social media exposes people to bullying and trolling and thereby negatively impacts mental health” (O’Reilly et al., 2018). These platforms of sharing and consuming content have addictive elements to them. According to O’Reilly et al. (2018), “The suggestion presented was that social media was as addictive as substances and can be problematic for some people, as it takes away from time from their families which can have bad side effects”. Since the restrictions brought in as a result of the pandemic, young people’s increased use of social media with no other outlet such as school, may have young people feeling as if there is no relief from the bullying and trolling.

Social media played and is still playing a vital role in the distribution of information about the public health crisis. Information is easily accessible on an array of platforms from accounts such as news outlets, news reports as well as politicians. However, with this comes the potential of absorbing and putting false information on such platforms for users to consume, which is also adding stress and anxiety surrounding the pandemic. “Social media channels were deemed the most common resource on Covid-19, albeit with the greatest potential for misinformation” (Gupta et al., 2020). Social media platforms and users became overloaded with information regarding the pandemic, the WHO (World Health Organisation), has come up with a term for this information overload, an “infodemic”. According to the WHO (2020), an infodemic is “an overabundance of information, both online and offline. It includes deliberate attempts to disseminate wrong information to undermine the public health response and advance alternative agendas of groups or individuals. Mis- and disinformation can be harmful to people’s physical and mental health”. However, social media can also help with those who are feeling isolated and anxious by creating a sense of normality and maintaining social contacts. As stated in an article by Wiederhold (2020), “This can be done by connecting with others via video chat programs, e-mail, or messenger apps… sharing useful information with friends and family during these interactions as a way to help them deal with their own anxiety”.


2.4 Social Isolation and Mental Health

As humans, we are very social beings. We long for social interactions and healthy relationships. This may have a negative impact on our mental health when these needs are not met. Social isolation may come about with age, falling out of contact with those who were once in our lives and even through death when grieving the loss of a loved one (Coyle & Dugan, 2012). Loneliness is often the feeling associated with social isolation. According to (Health (U.S.), 1984) “Loneliness is the unpleasant experience that occurs when a person’s network of social relationships is significantly deficient in either quality or quantity. Moustakas (2016), describes loneliness of modern life in two ways, existential loneliness which is “an intrinsic and organic reality of human life where there is both pain and triumphant creation emerging out of long periods of desolation”, and loneliness anxiety which “results from a fundamental breach between what one is and what one pretends to be, a basic alienation between man and between man and his nature”. There have been health risks associated with social isolation and loneliness such as cardiovascular risk, depression, suicide and dementia (Leigh-Hunt et al., 2017).

The restrictions imposed in Ireland as a result of the Covid-19 outbreak resulted in the country in lockdown, businesses to close, travel restrictions, no assembling of large crowds, cancellation of social plans and the general advice to the public to stay at home in order to protect public health. These restrictions resulted in social isolation, separation from family, friends and usual everyday routine (Usher et al., 2020). The given restrictions are likely to induce psychological distress on many. Students in particular are likely to experience stress and anxiety. “Psychological distress may be influenced by the loss of various academic opportunities, anxiety about schooling, graduation and future prospects, financial difficulties due to lack of part-time work and high social media exposure” (Yamamoto et al., 2020). It is not yet known the long-term effects of these restrictions, however, in a study by Chen et al. (2020), it was found “that long-term isolation in response to Covid-19 has had a complex influence on the mental health of young people”.

2.5 Communicating During a Pandemic

With the coming of the world wide web in the 1990’s, the way in which we as humans communicate with each other changed forever. Particularly in the last few years with the rise of social media and the rapid growth of users, there has been a huge shift to computer-mediated communication (CMC). According to John December (2020), CMC can be defined as “the process by which people create, exchange and perceive information using networked telecommunications systems (or non- networked...
computers) that facilitate encoding, transmitting and decoding messages.” Now, more than ever CMC is an important part of everyday for living in the midst of a pandemic in order for life to carry on, in a way that is as normal as it can be. With this, comes the limitations to what the virtual world can offer in comparison to doing things face-to-face (Nadler, 2020). The imposed restrictions and general government advise to stay at home and limit social interactions, brought about alternative methods to be used in order to carry out work, education, religious services, fitness classes and many more daily activities. The world turned to CMC, particularly audio-visual technology (AVT) and video communication software such as Zoom, in order to carry out activities remotely. AVT is favoured more in CMC than just audio technology alone as “it heightens exchanges by capturing communication nuances such as body language and tone” (Nadler, 2020). However, CMC does not fully replicate the same experience as a face-to-face exchange as according to Nadler (2020), “presence is not necessarily physical: it is spatial”.

After some weeks of engaging in full time CMC, the term “zoom fatigue” came about for many, as mentioned by outlets such as the BBC and National Geographic the phrase refers to phenomenon that CMC users are “more exhausted at the end of the workday than they used to be”. According to Fosslien & Duffy (2020), this comes about as we are “forced to focus more intently on conversations in order to absorb information” and because of, “how we process information over video – we show we’re paying attention by looking into the camera, but in real life, how often do we stare at a colleagues face? Not to mention most us are staring at a window of ourselves, making us hyper-aware of every wrinkle, expression and how it might be interpreted. Without the visual breaks, our brains grow fatigued”.

2.6 Conclusions
The purpose of this literature review was to understand the context of this research paper. Understanding the topics outlined above plays an important role in this matter. Today’s society is being directly impacted as a result of the Covid-19 pandemic. Third level education heavily relies on modern technology to deliver lessons and material. However, lack of face-to-face social contact can lead to anxiety and depression. Increased social media use has both positive and negative impacts on young people. Social media is vital for making connections and staying connected to others during a global pandemic, but increased use can also lead to addiction, bullying and online trolling. Long-term social isolation can result in psychological distress on young people’s mental health, as well as missed academic opportunities that may have long-term implications in years to come. CMC has become the new normal for many
everyday activities that replaced face-to-face activities which is leading to unexplained exhaustion and lack of motivation for many. There are still many gaps and unknowns in current research regarding these topics as Covid-19 and its impact is still a very recent area of research. This research paper will build upon the theories and concepts outlined above and will explore whether technology is adding or alleviating to the mental health effects of an online based environment. I will be focusing solely on third level students for my primary research. My secondary research will focus on a larger demographic of people. It will also concentrate of the experiences of students during the pandemic of learning online, social media usage, social isolation and communicating with others and their behaviours surrounding these topics.
Chapter 3: Methodology

3.1 Introduction
This research paper aims to find out if technology is adding or alleviating the mental health effects of an online based learning environment for third level students. The primary method of research being used will be to collect quantitative and qualitative data in the form of a survey. My secondary method of research being used is a systematic literature review where I will systematically and strategically collect qualitative data through synthesising and analysing existing research articles. Using this method of research will establish a well-rounded view of the question being asked. In order to answer the primary question, “Is technology and social media, adding or alleviating the mental health effects of an online based learning environment during Covid-19?”, there are a number of sub-questions to be answered.

- What are the limitations and challenges of online learning, faced by students?
- Are there any benefits to online learning?
- Does social media exposure effect mental health?
- What are some coping strategies being used during Covid-19 restrictions?
- How has the use of technology changed during Covid-19?
- Is technology being used as a coping mechanism during Covid-19?

3.2 Research Methods Considerations
There are many forms of research methods that are utilised today to carry out research in the form of primary and secondary research and collecting qualitative and quantitative data. There are many methods of research that could work to answer this question. I will discuss the advantages and disadvantages of the options considered for this research paper.

3.2.1 Primary Research Method: Survey
According to Fink (2003), a survey is “a system for collecting information from or about people to describe, compare or explain their attitudes and behaviours”. Data is usually collected from a sample of individuals, usually people who have experience, knowledge or interest in the area of research. Surveys can provide both qualitative and quantitative data, depending on the question being asked. For this particular research question, a survey could be distributed to students asking various questions about their online learning experience, their social media usage and its impact, their
experiences regarding social isolation and how they are communicating virtually during the Covid-19 pandemic. Surveys are flexible and are a quick and effective way of gathering large amounts of data that is varied. It is a particularly suitable option for this research paper as surveys afford the option for participants and their data to kept anonymous. There are also some disadvantages to carrying out a survey. Participants may not feel obliged to provide accurate and honest data. Participants may not feel comfortable answering certain questions or may some questions may make them feel uncomfortable. Despite this, carrying out a survey can provide rich an insightful information to contribute to this research paper and therefore is a research instrument of choice in this research paper to aid answering the question at hand.

3.2.2 Primary Research Method: Interview
In terms of research, an interview can be described as a conversation between two people where “the interview coordinated a conversation aimed at obtaining desired information” (Gubrium & Holstein, 2001). The process would involve reaching out to the interviewee, scheduling the interview with a time and location and informing the respondent on the nature of the interview. Interviews are a form of qualitative research and are a way to gain rich an insightful information into the topic being researched. There are many advantages to interviews including the ability to provide flexibility to the interviewer, interviewee and the structure of the interview. The interviewer can receive more insightful responses than you would using survey or questionnaire as a research tool. As well as this, interviewers also get the opportunity to read the non-verbal communication of the interviewee as they are usually conducted in a face-to-face setting. Despite this, there are also some disadvantages to using an interview as a research instrument of choice. Interviews can be time consuming and does not suit this research paper as a result of the Covid-19 pandemic and for these reasons, conducting interviews did not suit the timeline for this research paper.

3.2.3 Secondary Research Method: Systematic Literature Review
According to Smith (2020) a “systematic literature review or ‘systematic review’ is commonly used for a structured search and review of published research papers. A systematic review “attempts to identify, appraise and synthesis all the empirical evidence and that meets pre-specified eligibility criteria to answer a specific research question” (Cochrane Library, 2013). Systematic reviews have a variety of advantages, specifically their ability to limit bias, draw reliable and accurate conclusions, improve generalisability and consistency of results and overall increase precision of the results (Gopalakrishnan & Ganeshkumar, 2013). Systematic reviews are also good for
comparing results and discovering inconsistencies and gaps in research. For these reasons, carrying out a systematic review of literature is a research instrument of choice for this paper as it allows us to use research results from a wider demographic of the population. This allows for comparisons across a wide range of studies, comparing people’s opinions and experiences worldwide, rather than just a specific county or institution. This allows us to analyse the research from an unbiased, well rounded perspective.

3.3 Systematic Literature Review

3.3.1 Refined Criteria
Papers to be included for this study included the following:

- Must be published within the last year.
- Include subjects related to the impact of Covid-19.
- Involve subjects related to mental health, social media, online learning, students, technology and communication.
- Must be published in English.
- Be primary research.

Ideally the studies would just include studies including students, but because the impact of Covid-19 is a new area of research, there was some studies with university faculty, adolescents and some general studies included too, in order to get a well-rounded insight and to avoid bias.

3.3.2 Search Process
An array of databases was used to search for relevant papers to aid this research paper. Some of the databases included Google Scholar, AMC Digital Library, SAGE Journals, Research Gate, JSTOR and TCD Library. Searching the bibliographies and references of relevant papers were also searched to find related studies. The inclusion criteria were applied at the initial searching process and the search was refined to only include papers from the last year, where newer papers were prioritised, particularly those with studies related to Covid-19. Some of the search terms included:

- Online learning mental health students Covid-19
- Online learning
- Online learning during Covid-19
- Effects of online learning
- Advantages of online learning
3.3.3 Screening
Throughout the searching process, 56 papers were screened. In order to avoid bias, all papers that matched the inclusion criteria were analysed, even if they did not match the research question exactly. All articles that met the inclusion criteria were then screened to double insure they fit the inclusion criteria. Some articles that were not available for access were unfortunately excluded. The 56 papers were then short listed to 23 papers, depending on their methodology and focus of the study. Studies that did not take place through the Covid-19 period were excluded, with the exception of those that had a longitudinal methodology and compared a recent study to a study from before the Covid-19 restrictions, like Macdonald & Hülür (2020). Some articles that did not focus enough on students and adolescents were excluded. Articles that were review based rather than primary research were also excluded. Also, articles that didn’t have methodologies suitable for this research question were also excluded. Some articles that focused too much on the online learning experience rather than the effects of this online learning experience were also excluded and likewise articles that were too general were excluded. Articles such as Ng et al. (2020) were excluded for lack of rich information in the study. Likewise, some articles were excluded if they had insufficient information to offer in the aid of answering the research question.

The chosen articles that met the criteria were included no matter what the outcomes of the studies. The chosen articles each had their own unique perspective and different methods of research which made for a well-rounded point of view in studies to avoid bias. Similar to a study from Macdonald & Hülür (2020), a study from Elmer et al.
(2020), also breaches the inclusion criteria slightly as it includes a study from pre Covid-19 and compares to a study taken place during Covid-19. However, these studies are really valuable as it compares to student’s experiences from before Covid-19 and can aid to answering the research question.

All articles screened had English translation, so there were no issues in regards papers that were in other languages. To avoid bias and to get a well-rounded perspective of research, the chosen articles are from worldwide demographics, rather than just one country or area. All articles were of reputable standard from reliable sources and were peer reviewed journals. Conclusively, 13 papers were chosen for the systematic review. Findings of the review will be discussed in Chapter 4.

3.4 Survey

3.4.1 Target Participants and Distribution
Taking into considering the nature of this research paper, the chosen demographic of people to take part in the survey is third level students, participating or who have participated in online based learning during the Covid-19 pandemic. Participants should be over 18 and is targeted at students in year 2 of studies or above. For data security the survey was created securely on the online service Qualtrics, licenced by the School of Computer Science and Statistics, Trinity College Dublin. All participants identity and information are kept anonymous and confidential. Participation was completely voluntary and participants could withdraw from the survey at any time. The survey was distributed to students through student email and personal contacts.

3.4.2 Design of Data Collection
The survey was designed so that participants could fully express their thoughts and opinions on the given questions. The questions were first piloted with some classmates to ensure the questions are unbiased in order to get a well-rounded, objective view of the participants behaviours while learning online during the Covid-19 pandemic. Questions are precise and to the point, so participants have a clear understanding in what they are answering and this way rich, insightful information was obtained. A full list of the questions can be seen at Appendix 2.

3.4.3 Ethical Considerations
An application was made to the Ethics Committee of the School of Computer Science and Statistics, Trinity College Dublin, ethics board on the 21/12/20 and was approved on 22/03/2021. A copy of the approval email is provided in Appendix 1. There were
some ethical considerations raised by the project. There was a concern raised in regards the survey triggering participants mental health. I responded to this concern by providing mental health recourses to participants, should any of the questions trigger any issues for participants. All participants were required to confirm that they are over 18. All data collected is in accordance with the General Data Protection Regulation (GDPR).

3.4.4 Limitations
There were a number of limitations faced in this research paper. The first and most prominent being the Covid-19 pandemic. As this research paper is being conducted remotely, there were a lack of resources such as limited access to the library in person and the inability to conduct interviews face-to-face. As well as this, a word limit and a shortage of time were also constraints, particularly regarding the amount of time the survey was distributed and open to participants. Due to Covid-19, there was also a delay in receiving ethical approval from the ethics committee which caused a further shortage of time for my survey to be distributed.
Chapter 4: Findings

4.1 Introduction
This chapter will outline the findings of the systematic literature review, followed by those of the survey. The discussion of those findings, in the context of the research question, will take place in the following chapter. The aim of this research paper is to find out if technology is having a positive or negative impact on the mental health of students throughout the course of the Covid-19 pandemic, where university courses and assessment is taking place online and physical social contacts are limited. As well as primary research taking place in the form of a survey, this paper also systematically collects and analysis’s existing published research papers. This actively demonstrates that this research paper establishes a well-rounded and fair view of the primary question and sub questions at hand.

4.2 Data Analysis
The chosen papers went under a qualitative data analysis by being organised into categories and subcategories. Other data was then quantified, as displayed in figures 1, 2 and 3. In terms of organising the research, the data took both a deductive approach and inductive approach. Quantified data can be seen in figures 1, 2 and 3.

4.2.1 Deductive approach
When organising the research papers, a table of headings was created (as shown in 4.2.2). Information from the papers were coded and placed under headings according to:

- Sample size and demographic of study
- Geolocation of study
- Methodology

Organising the data in this way proved useful for comparing and contrasting the studies and their data to find any similarities and finding gaps in the studies.
### 4.2.2 Table of findings

<table>
<thead>
<tr>
<th>Article</th>
<th>Sample</th>
<th>Location</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>O’Sullivan et al. (2021)</td>
<td>n=94 adolescents,</td>
<td>Ireland</td>
<td>Interviews</td>
</tr>
<tr>
<td>Mukhtar et al. (2020)</td>
<td>n=24, university faculty and students</td>
<td>University of Medicine &amp; Dentistry &amp; University of Lahore, Lahore, Pakistan</td>
<td>Focus group interviews</td>
</tr>
<tr>
<td>De Michele (2020)</td>
<td>n=52, students</td>
<td>University of Bologna, Italy</td>
<td>Web-survey</td>
</tr>
<tr>
<td>Shenoy et al. (2020)</td>
<td>n=20, university faculty</td>
<td>ISBR Business School, Bangalore, India</td>
<td>Telephone interview</td>
</tr>
<tr>
<td>Giovannella (2021)</td>
<td>n=101, students</td>
<td>University of Roma Rome, Italy</td>
<td>Questionnaire</td>
</tr>
<tr>
<td>Son et al. (2020)</td>
<td>n=195, students</td>
<td>Texas A&amp;M University, Texas, Dallas, US</td>
<td>Interview survey</td>
</tr>
<tr>
<td>Wang et al. (2020)</td>
<td>n=2031, students</td>
<td>Texas A&amp;M University, Texas, Dallas, US</td>
<td>Online survey. Scales used: Patient health questionnaire &amp; General anxiety disorder</td>
</tr>
<tr>
<td>Baloran (2020)</td>
<td>n=530</td>
<td>University of Mindanao, Philippines</td>
<td>Cross sectional</td>
</tr>
<tr>
<td>Gao et al. (2020)</td>
<td>n=4872, general</td>
<td>Fudan University, Shanghai, China</td>
<td>Online survey</td>
</tr>
<tr>
<td>Adnan &amp; Anwar (2020)</td>
<td>n=126, students</td>
<td>National University of Sciences and Technology, Pakistan</td>
<td>Online survey</td>
</tr>
<tr>
<td>Hossain et al. (2020)</td>
<td>n=880, general</td>
<td>Khulna University, Bangladesh &amp; University of Leeds, UK</td>
<td>Cross sectional</td>
</tr>
<tr>
<td>Elmer et al. (2020)</td>
<td>n=266, students</td>
<td>ETH Zurich, Switzerland</td>
<td>Questionnaire % Comparison of studies</td>
</tr>
<tr>
<td>Macdonald &amp; Hülür (2020)</td>
<td>n=99, general</td>
<td>University of Zurich, Switzerland</td>
<td>Micro longitudinal</td>
</tr>
</tbody>
</table>
**Figure 1: Sample Size of Studies:**

![Pie chart showing the sample size distribution of studies with categories: Under 150, 150-999, Over 1000.]

**Figure 2: Demographics of Studies:**

![Pie chart showing the demographics distribution of studies with categories: Adolescents, Students, General Study, University Faculty.]

4.2.3 Inductive approach

To further organise the data from the selected research papers, the data was broken down into three sections:

- Online learning during Covid-19 and its effects on student’s mental health
- Social media usage and mental health
- General mental health, social isolation and coping mechanisms during Covid-19

These sections were found through patterns and similarities found in the studies, making it inductive in its approach. The papers were read and analysed and separated into its relevant category. Five of the papers focused mainly on online learning and its effects. Three of the papers focused on social networks and social media. Five articles focused on general mental health during Covid-19, impacts of isolation and coping strategies. An inductive approach was carried further to find subcategories within the main categories. The findings of each paper were studied and coded. Themes began to emerge in terms of findings and the subcategory titles were created and from here the subcategories are discussed under the main categories. This was a necessary step in order to group similar findings within studies and enabled me to find gaps within the research, which are filled through the findings of the survey.
4.2.4 Table of categories and subcategories:

<table>
<thead>
<tr>
<th>Subcategories</th>
<th>Online learning during Covid-19 and its effects on student’s mental health</th>
<th>Social media usage and mental health</th>
<th>General mental health, social isolation and coping mechanisms during Covid-19</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Limitations of online learning.</strong></td>
<td>• Limitations of online learning. • The benefits or online learning. • Psychological impact. • Other findings.</td>
<td>• Social networks, social media and anxiety. • Social media exposure and mental health. • Other findings.</td>
<td>• Student’s mental health during Covid-19 • Isolation and loneliness • Coping strategies and technology during Covid-19 • Other findings.</td>
</tr>
<tr>
<td><strong>Social media usage and mental health</strong></td>
<td>• Social networks, social media and anxiety. • Social media exposure and mental health. • Other findings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>General mental health, social isolation and coping mechanisms during Covid-19</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subcategories</strong></td>
<td><strong>Articles</strong></td>
<td><strong>Articles</strong></td>
<td><strong>Articles</strong></td>
</tr>
<tr>
<td></td>
<td>• De Michele (2020) • Mukhtar et al. (2020) • Shenoy et al. (2020) • Giovannella (2021) • Adnan &amp; Anwar (2020)</td>
<td>• Elmer et al. (2020) • Gao et al. (2020) • Hossain et al. (2020)</td>
<td>• Macdonald and Hülür (2020) • O’Sullivan et al. (2021) • Son et al. (2020) • Wang et al. (2020) • Baloran (2020)</td>
</tr>
</tbody>
</table>
4.3 Systematic Review

This section will outline the findings from the systematic review. Discussion of the findings, in terms of the sub research questions and main research question will be discussed in Chapter 5.

4.4 Online learning during Covid-19 & Effects on student’s mental health

4.4.1 Limitations and challenges of online learning

Mukhtar et al. (2020), reported that both students and faculty found that they were unable to learn and teach practical and clinical work through online modalities and they could only teach and assess knowledge component. It was also found that due to lack of immediate feedback, that teachers were unable to assess students understanding during online lecturing. Students reported having a limited attention span. Teachers also mentioned students misbehaving by accessing online resources during assessment.

Shenoy et al. (2020), found faculty had a closed mindset in regards switching from physical classes to virtual. Similarly, Giovannella (2021), found that teachers were not fully prepared to redesign and adapt their didactic to the new situation and similar to Mukhtar et al. (2020), one of the main concerns from institutions is the possibility of students to cheat during distanced exams. It was also reported in this study that both faculty members and students said they were unable to teach and learn practical and clinical work through online learning and they could only teach and learn the knowledge component.

De Michele (2020), found students reported fatigue and distractions while using technology devices to attend online lectures. Some of the limitations reported by Adnan & Anwar (2020), included lack of access to internet facilities for students or poor-quality internet services, lack of proper interaction with colleagues and teachers, as well as inadequate technology in place to carry out online teaching. It was also found in this study that 42.9% of students had difficulty when completing group assignments without any face-to-face discussion with group members and a lot of problems arose.

4.4.2 The benefits of online learning

Mukhtar et al. (2020), reported that faculty found that online learning allowed for administrative tasks such as recording of the lectures with ease. It was also found that students had become self-directed learners and have the ability to learn asynchronously throughout the day. De Michele (2020), found that almost every student that took part in their study agreed on the benefit of not having to commute
to the school or university each day. Other benefits found was that students had all books at hand during online learning and students were able to sleep more before class. It was also found in this study that the capacity of the online learning classroom was infinite so more students could join with ease.

Shenoy et al. (2020) found that student attendance is 20 times better with almost 100 percent attendance when students are attending class online and are overall happy with technology adaptation, teaching and learning methods adopted in higher education institutes in Bangalore.

Giovanella (2021), found that students declared that devices they had used for socialising and entertaining purposes up until lockdown, were now very useful in terms of online learning and were now using these devices with a new perspective. Students also reported an increase of digital skills such as the ability to take part in online classes, digital communication, using a collaborative working environment and production of digital content, to name a few. Adan and Anwar (2020), found that students can easily manage their study time and easily complete assignments in time.

**4.4.3 Psychological Impact of online learning**

De Michele (2020), tried to investigate if online learning had a positive psychological impact on students. Students had to rate their agreement to various statements. Some positive psychological impacts included 42% of students reported online learning moderately helped them study. 38% of students reported online learning moderately helped them not to get bored. 42% of students reported online learning moderately helped them establish a route and 26% reported online learning moderately helped give a sense of normality. However, on the other hand, there were also some negative psychological impacts. 52% of students reported online learning did not help at all to strengthen relationships with their classmates. 51% of students reported online learning did not help strengthen their relationship with their teachers and finally 32% of students said online learning moderately makes them more stressed out.

**4.4.4 Other findings**

Mukhar et al. (2020), reported some recommendations made from teachers and students, such as continuous faculty development through reduction in cognitive load and increased interactivities during online lecturing. Shenoy et al. (2020) reported students sharing an organised coffee meeting every Friday to share gratitude during the lockdown period, so that students can have social interaction with each other to exchange their views and experiences with one another.
Giovannella (2021), found that during the lockdown in Italy, laptops replaced smartphones and that students consider the use of didactic technologies very useful and help increase the level of their “digital self”. Adnan and Anwar (2020), reported that 50.8% of their participants reported it is not possible to effectively carry out the entirety of their college course online.

4.5 Social media usage and mental health

4.5.1 Social networks, social media and anxiety
Elmer et al. (2020), conducted a study where they compared student’s social networks and mental health before and during lockdown. The study conducted prior to Covid-19, used longitudinal data collected from 2017 to 2019. It was reported that the number of social networks between students reduced significantly during Covid-19, while support networks and friendships remained the same. Pleasant interaction and networks that facilitate co-studying were significantly reduced, face-to-face interaction with other students was reduced but interaction through text messaging, video calls and social media increased. When comparing the changes in mental health in this study, a change in anxiety levels among the students was explored. There was a slight increase in anxiety, especially among students whose isolation was in a student social network.

Hossain et al. (2020), conducted a study in Bangladesh where people’s social media exposure and anxiety was measured during the Covid-19 crisis. The study shows that the prevalence of anxiety was 49.1% of people who took part in the study. The findings also showed that various characteristics contributed to increased anxiety such as being married, being in the 21-25 years age group, living in urban areas and having greater exposure to social media and electronic media. Also, those spending more than 4 hours per day on social media or electronic media were more likely to show anxiety symptoms.

Gao et al. (2020), conducted a study where peoples social media exposure and mental health problems were analysed during the Covid-19 pandemic in China. It was found that social media exposure was higher among people under 30, students and people who are retired. The prevalence of anxiety was 22.6% and was greater among those in the 31-40 years age group and lower among students attending college.
4.5.2 Social media exposure and mental health during Covid-19

Elmer et al. (2020) used the German version of the Centre for the Epidemiological Studies Depression scale to measure depressive symptoms of students during the Covid-19 crisis. Stress and loneliness changes were also measured in this comparison study. Students reported that they felt significantly more isolated and worried about family and friends. Other concerns included worry about their financial situation, the economy and their future career. Findings in this study also included that since September 2019, students became more depressed, more stressed and lonelier and interactions through social media increased to keep social interactions.

Goa et al. (2020), found that 82% of participants who expose themselves to social media frequently, was associated with high odds of anxiety and depression. It was also found during the Covid-19 outbreak, misinformation and false information surrounding the situation on social media, may confuse people and harm people’s mental health.

Hossain et al. (2020), found a correlation between severe anxiety and their exposure to social and electronic media. One third of participants were using social media to get updated information regarding the Covid-19 situation. The over exposure of media and misinformation might lead to anxiety symptoms.

4.5.3 Other findings

Elmer et al. (2020), found that social networks between students changed during the Covid-19 lockdown. Students reported fewer interaction partners and fewer study partners. However, friendship networks remained stable and informational while emotional support slightly increased. Hossain et al. (2020), found that the use of electronic media in Bangladesh was higher among males than it was females and that those with greater expose to electronic media were more likely to show symptoms of anxiety.

4.6 General mental health, social isolation and coping mechanisms during Covid-19

4.6.1 Student’s mental health during Covid-19

A study conducted by Son et al. (2020), where 195 students took part in an interview survey, found that 71% of their participants, indicated that their stress and anxiety levels had increased as a result of the Covid-19 pandemic. 20% of participants indicated that it remained the same and 9% mentioned that stress and anxiety levels had actually decreased. 89% of participants had indicated having difficulty focusing on
academic work, as sources of distractions had increased at home. Respondents also mentioned they were more likely to be interrupted by family members and household chores at home. Other findings included 44% of participants reported experiencing some depressive thoughts during the pandemic with major contributors being loneliness, uncertainty, concerns about academic performance and over thinking. Similarly, in a study by Wang et al. (2020), 2031 students took part in an online survey where the patient health questionnaire and general anxiety disorder scale was used investigated the mental health of US college students during Covid-19. It was found that 80.57% of their participants reported some level as depression ranging between mild, moderate, moderately severe and severe. It was also found that 71.75% of respondents experienced anxiety or stress with severity levels ranging from mild, moderate or severe. The biggest indicator reported for an increase in stress and anxiety was related to academics, transition and maintenance of online classes. Concerns regarding grades, delayed graduation and the most frequent being stress surrounding the pandemic were also contributors. It was also reported in this study that a few participants reported experiencing a decrease in stress levels, as a result of time saved, not having a commute to school and reduce workload.

In a cross-sectional study by Baloran (2020), a total of 530 participants took part in the study. It was found that the majority of their participants experienced anxiety during the entire lockdown period in the Philippines. It was also found that 48% of their participants were worried about their studies as a result of lockdown and 56% of participants avoided social any contact.

4.6.2 Isolation and loneliness during Covid-19

Macdonald and Hüülür (2020), conducted a micro longitudinal where 99 people took part. They found that the Covid-19 pandemic had substantial adverse effects on adults and their emotional well-being and loneliness. The results of the study showed that levels of loneliness increased significantly from levels of loneliness before the pandemic. It was also found that people who were more satisfied with their communication levels to others, had less of an increase in loneliness. In addition, people with health conditions reported having an increase in loneliness.

In a study by O’Sullivan et al. (2021), where interviews with parents and adolescents took place around mental health during the Covid-19 pandemic in Ireland, it was found children’s adverse mental health outcomes were provoked by experiences of social isolation and loneliness. A child stated that they “hated everything about Covid”, when discussing being separated from their friends and school. The study showed that young people’s mental health is being impacted by social isolation and loneliness, with
many mourning the cancelation of milestone events and were negatively impacted by the loss of structure and routine. Son et al. (2020), found that the majority (87%) of their participants had increased levels of social isolation. 54% of participants reported that their interactions with friends and other people had decreased significantly with 31% expressed concern about their lack of in person interactions with others. Wang et al. (2020), found a number of lifestyle related concerns among their participants. 86.80% of respondents reported changes to social relations or social isolation ranging from mild, moderate and severe. Other concerns included relationships and social activities being affected by isolation, as well as issues with family members and roommates.

4.6.3 Coping strategies and technology during Covid-19
Son et al. (2020), found that 76% of participants used a variety of coping mechanisms to cope with stress and anxiety imposed by Covid-19. Firstly, it was found that 34% reported communicating with family and friends helped deal with stress and anxiety. Use of technology was also reported to be a coping strategy, with participants reporting using the virtual meeting application Zoom, to connect with family and friends. 1 participant also mentioned using Sanvella, a mental health service app. 23% of participants reported using negative coping mechanisms such as ignoring the news about Covid-19. Other mechanisms included, sleeping longer, drinking or smoking or distracting themselves by doing other tasks. Positive coping mechanism included meditation, keeping routine and spiritual measures. The majority of the participants who reported using coping mechanisms also mentioned doing relaxing hobbies such as physical exercise, using social media or streaming services, playing with pets, journaling, listing to music, reading and drawing.

Similarly, Son et al. (2020) found that more than half of their participants (67%) mentioned using support from family and friends as a coping mechanism and stress reliever during Covid-19. It was also found that 32.45% of participants reported using support from technologies such as websites and mobile apps that monitor your health. 14% of respondents reported using mindfulness and meditation apps such as Headspace. Social media apps such as Twitter, Instagram, Facebook and TikTok were also used along with YouTube for entertainment purposes. A small number of respondents reported using video gaming apps to cope with stress. Other coping mechanisms found were similar to Wang et al. (2020), where students engaged in physical activity, playing with pets, reading and listening to music.
4.6.4 Other findings
O’Sullivan et al. (2021), found that the removal of structure and routine for teenagers during Covid-19 led to parents having increasing concerns for their children. One parent reported their daughter having increased anxiety around body image. Son et al. (2020), found that 91% of their participants had increased fear about their health and the health of a loved one. Particularly those who are more who are more vulnerable such as older adults, those with existing health conditions and those who are pregnant or have recently given birth. 86% of participants who took part in this study also reported disruptions to their sleep patterns with 50% of students reporting they tended to stay up and wake up later than they did before the outbreak of Covid-19.

4.7 Survey Findings

This section will outline the findings of the survey. The survey’s target audience was students who are or were previously taking part in online learning in third level education or mix of online and face to face learning. There were 51 respondents in total who are taking part in studies in various parts of the world (see figure 4), with 57.69% of respondents taking part in full online learning with no face-to-face classes and 42.31% taking part in a mix of online leaning and face-to-face learning. The locations of the respondents included students from all over the world, including Europe and Asia as shown in figure 4, but were predominantly based in Ireland.

4.7.1 Inductive approach

In order to organise the data from the survey, the data was broken down into various sections:

- Challenges of online learning
- Social media usage and mental health
- Advantages of online learning
- Changes in use of technology during Covid-19
- Social media usage during Covid-19
- Social media and mental well-being
- Technology and mental well-being

These sections were found through patterns and similarities found in both the survey questions and the results, using an inductive approach. The results were analysed and coded, then separated into its relevant category. This approach allowed me to highlight new information which was not found in the systematic review, which is later discussed in Chapter 5.
4.7.2 Challenges of online learning

There were a number of challenges highlighted by respondents when asked what are the main challenges being faced by students when attending classes online and away from campus. Of the 44 students who responded to this question, 44% mentioned having problems. These included challenges with group work, inadequate work spaces, decreased communication with lecturers, increased difficulty carrying out group projects remotely, fatigue and poor recourses at home such as hardware and Wi-Fi. They also cited the lack of use of college facilities such as the library, sports facilities clubs and societies, despite paying full tuition fees. As a result of this, they reported that it is harder to make friends and form connections with fellow students. One respondent reported their main challenges as, “Lack of resources from home, no access to library resources, internet connection issues, not seeing different people for socialising, trouble communicating with lecturers, it wasn’t easy to access reading materials or access primary source material for assignment”. As well as this, 36.3% of respondents reported lack of social interaction as their main challenge with learning online. Respondents reported issues with connecting with friends, connecting with classmates, forming new friendships and liaising with colleagues during group projects, as some reported never previously meeting some colleagues in person.
before. One student reported, “It was great starting a new group project when we had face-to-face meetings, we are more motivated and energetic to work together as a group. Ever since it moved to online lectures, conversations become less frequent between groups, and seldom do we have high productivity when we are no longer in an uplifting study ambience”. Additionally, 19.7% of respondents reported having some issues with mental health as a result of learning online. Students reported high levels as loneliness as well as issues with anxiety and depression. One respondent reported, “This time has been extremely bad for my mental health. I have increased anxiety, I feel very isolated, and I have a hard time making friends or finding support”.

4.7.3 Advantages of online learning
When asked, “Is there are any advantages to online learning?” there was 49 respondents in total. 81% of respondents reported that there are advantages to online learning. Some of these advantages included, saving money on rent and transport, having no commute and having more time to dedicate to study as well as being able to fit studies into their lifestyle. Students reported bring able to study in a comfortable environment, being able to attend lectures from anywhere in the world, being able to attend class even when sick. Other advantages mentioned were not having to commute to college on days where there are only 1-2 hours of classes and the ability to record lectures to look back on at a later stage. A student reported, “I live far from the campus and it takes me between one to two hours to travel to and from the college. On top of the time, it requires me to do a morning routine, catch a timed bus and travel, I will have to leave for campus much earlier than when class begins. Studying from home means that I can use this travel time to work on assignments and catch up with studies”. However, 19% of respondents reported no advantages to learning online. Some of the reasons included, carrying out the same work except with half the resources and support, missing out on life experiences, missing out of practicing practical skills such as labs and field work, not being able to discuss and argue points in person as well as difficulty focusing and lack of motivation. A student reported, “People need face to face contact to discuss ideas, or to argue opinions and points. Also, for people to ask questions or to point out where they are confused. I found that from online learning I wasn’t asking questions when I was confused on something and I noticed other people were staying quiet too that would normally be vocal in classes. It is extremely difficult to function without human contact also”.
4.7.4 Changes in use of technology during Covid-19

There were 49 respondents when asked “what technology is deemed essential during Covid-19?”. The survey asked respondents to rank the given technologies in order of what they deemed essential. The 43.3% of respondents reported a laptop being their number one. 39.2% reported their mobile phone as number two, with the next preferences being television, game console and interactive speaker. Some other technologies mentioned by respondents included external monitors, tablets, headphones, and kindles. One respondent mentioned, “I think a kindle has been so useful because I’ve been able to download all my books at a lower cost and I don’t have to worry about where I will buy them from”.

When asked if there are any new technologies being used during Covid-19, there was 32 respondents in total. 31.2% of respondents mentioned that they aren’t using any new technologies with 68.8% of respondents mentioning that they are using new technologies. Of the 68.8%, 40.6% mentioned using new video conferencing software such as Zoom and Microsoft Teams. One respondent mentioned, “The ability to work from home and conducting meetings online via Microsoft Teams or Zoom was something I’d never done prior to Covid-19”. Some of the other new technologies mentioned included an external monitor, gaming apps, headphones and kindles.

When asked if respondents are “using technology in a new way that it may not have been used prior to Covid-19?”, there was 49 respondents in total with 67.3% of respondents reporting yes, and 32.7% of respondents reporting no. Of the respondents that votes yes, 72.7% mentioned using their laptop in new ways they had not done before such as for attending classes, collaborating with classmates, job interviews, video calls with doctor, socialising with friends, working on group projects and doing presentations. One student reported, “I use my laptop for everything such as for online lectures. As well as using Microsoft Teams to meet up and discuss group projects instead of in person. I now use screen sharing for online presentations as well as using the microphone and webcam on my laptop for lectures, group meetings, meetings with supervisors and student’s union”. Other respondents mentioned using technologies such as food delivery services, using their phone to follow live streamed gym workouts, using VPN and remote desktop to access campus equipment, as well as compromising technology by using their mobile phones for photography and video assignments, where equipment would usually be provided by the college.
4.7.5 Social media usage during Covid-19

There were 49 respondents when asked, “If social media usage increased or decreased during the Covid-19 period?”. 75.5% of respondents reported an increase in their social media usage while 24.5% of respondents reported a decrease. Of the respondents who reported an increase, 21.6% reported an increase per day of 1-2 hours, 43.2% reported an increase of 2-3 hours, 21.6% reported an increase of 3-4 hours and 13.6% reported an increase of 5 hours or more. One respondent stated, “I estimate I have used my smartphone to use social media for about 12 extra hours per week, comparing to my pre-covid social media screen time”. In terms of social media platform usage, 32.65% of respondents reported Instagram as their most used social media platform. 28.6% reporting YouTube as their next preference. 10.8% reported Snapchat as their third preference. 8.2% reported Twitter as their fourth preference and 6.1% reported Facebook as their fifth preference. See figure 5.

*Figure 5: Usage of Social Media Platforms*
Other social media being used reported by respondents were WhatsApp, VSCO, LinkedIn, TikTok, Discord, Tinder and Slack.

When asked “if there has been a change in the way social media/ technology is utilised during the Covid-19 period?”, there were 49 respondents in total. Of the respondents, 69.4% reported yes and 26.5% voted no. Of those who reported yes, 51.4% reported connecting with other people and socialising as the main change in social media during the Covid-19 period. 16.2% of respondents reported social media accounts now being used as businesses. 16.2% reported people are now sharing more about their lives on social media. One respondent mentioned, “People are sharing more of their inner feelings and impressions. Before, people used to share what they were doing with friends when they met up, but now there is no possibility to do that so they are sharing more about their personal lives”. As well as this, 16.2% of reporting using social media for entertainment purposes.

4.7.6 Social media and mental well-being
There were 47 respondents when asked, “Does social media has made you feel guilty about how you spent your time during the Covid-19 restrictions?”. 70.3% of respondents reported yes, while 23.4% reported no and 6.3% reported sometimes. Of the respondents that votes yes, 69.6% mentioned feeling guilty about not being productive, as many others were sharing information about fitness, healthy eating, weight loss and upskilling with their free time. One respondent mentioned “Yes, I feel like there was a lot of pressure to be constantly productive and doing stuff to better your life, when it was and still is a very tough time for a lot of people and it’s very easy to lose motivation when there's nowhere to go and nothing to look forward to”. 15.2% of respondents reported using social media as a guilty pleasure and feeling down after spending time on it. “It is like a guilty pleasure, that does not give anything back and makes you feel worse after hours of scrolling”. 15.2% of respondents mentioned social media is a huge distraction and found it hard to concentrate on work that they were supposed to be doing. “I spent too much time on social media and couldn't easily concentrate on the work I had to do”. Some of the respondents who voted no, reported avoiding social media as they were already used to using it and knew how to avoid over consuming it. One respondent mentioned, “I am used to social media and always know how to take a step back and not let it affect me too much. Also, I don’t really care about what people think in general so I never felt guilty".
4.7.7 Technology and mental well-being

There were 47 respondents when asked “Do you think technology helped with your mental well-being during the Covid-19 restrictions?”. 57.4% of respondents reported yes, 25.5% of respondents reported no and 17.1% voted both yes and no. See figure 6.

Figure 6: Usage of Social Media and Mental Well-being

Of those who voted yes, 70.4% reported communicating with others and socialising as the reason technology helped with their mental well-being. 29.6% reported online resources such as news outlets along with fitness videos and online mental health resources as the reason technology helped them with their mental well-being. One respondent reported, “I think it is a great coping mechanism for me. I don’t know if it actually works, but at least when I watch hours of video content online, I get to switch off for a while and not think about the pandemic. Without any technology, I have no idea what I would be doing. In this case, and I think my mental health would be even worse”. Of those who voted no, overconsuming of social media, upset about Covid-19, scaremongering and spread of misinformation were some of the reasons reported for voting no. One student reported, “No. I think constantly comparing myself to others in a time like this did not help. It also gave me more spare time so I used social media a lot more which is not good for me. I also think social media became like a battlefront for people’s opinions about Covid-19 and lot of misinformation and scaremongering was spread”.

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There were 49 respondents to “Did you use any forms of technology to look after your mental well-being during Covid-19 restrictions?”. 40.8% of respondents voted yes while 59.2% of respondents voted no. Some of the technologies mentioned by those who votes yes are meditation apps such as Headspace and Calm, Yoga apps such as downward dog as well as YouTube videos for workouts. Running apps and gratitude journals were among some of the others mentioned along with student counselling apps which came about due to Covid-19.

When asked “Do you think technology helped with your mental well-being in any way during the Covid-19 restrictions?”, there were 46 respondents. 56.5% of respondents voted yes, 28.2% of respondents voted no, while 15.2% of respondents voted both yes and no. Of those who voted yes, 30.8% mentioned comparing themselves to those on social media as the reason technology can be detrimental to one’s mental health. One student mentioned, “As much as technology can be very useful for helping with mental well-being, it can also be a detriment. The nature of social media, for example, finds many people venting their frustrations with their current situations online. It can be very unhealthy at times to engage with all the anxieties and animosities that people are going through, and difficult to know when to switch social media off”. As well as this, 23.1% mentioning long hours looking at a screen causing headaches and fatigue. 23.1% mentioned too much time spent with technology and social media causes anxiety and depression. 23.1% reported news around Covid-19 numbers, deaths and stories from around the world as the reason they found technology to be detrimental to their mental well-being. One student mentioned “I definitely became a lot more anxious and depressed, the more I used it because I was comparing myself to others. The scaremongering and misinformation being spread about Covid-19 made my anxiety worse. The constant news articles and Covid-19 case updates made my anxiety worse too”. Among those who voted no, being aware of the effects of the over consumption of technology and social media was the main reason they don’t find technology to be detrimental to their mental well-being, as well as it being an essential to allow us to communicate with each other, work and study from home. One respondent reported, “No, I think it was essential for life to have some sort of normality. It allowed for people to work and study online, connect with others through social media, instant messaging and video streaming apps”.

Chapter 5: Discussion and Conclusion

5.1 Discussion of Findings
In this research paper, I set out to answer my research question, “Is technology and social media, adding or alleviating to the mental health effects of an online based learning environment?” In order to answer this, I must answer the sub-questions that help contribute to answering the main research question. In this paper I have reviewed literature on online learning, social media and mental health, social isolation and mental health and communicating during a pandemic. I have conducted a systematic review of existing studies of online learning during Covid-19 and its effects on student’s mental health, social media usage and mental health, general mental health, social isolation and coping mechanisms during Covid-19. As well as this I conducted primary research in the form of a survey which focused on online learning, use of technology and social media during Covid-19, changes in use of technology during Covid-19 and the effects on student’s mental health all of which aid to answer the sub-questions and main research question.

What are the limitations and challenges of online learning, faced by students?
From conducting the systematic review, the study revealed that the main limitations and challenges faced by students are having a lack of quality internet and hardware, delivering practical laboratory lessons and field work studies, limited attention span and fatigue from prolonged use of computer screens and lack of face-to-face discussion in class. From conducting the survey, it was found students face challenges in regards carrying out group work remotely and having inadequate workspace. As well as no use of college facilities and lack of social interaction which in turn leads to loneliness and anxiety.

Are there any benefits to online learning?
It became clear in the systematic review that the main benefits of online learning are having no commute in the morning and easier access to class which in turn has led to higher attendance. The survey revealed that the main benefits are saving money on high-cost rent near Universities campuses as well as saving money on transport. Some other benefits were being able to study and attend class in a comfortable environment, having more time to work on assignments and being able to work on your own terms.
**How does social media exposure effect mental health?**

It was found in the systematic review that during the Covid-19 period, social media usage among students, generally increased. It was also found that spending more than 4 hours per day on social media can lead to increased anxiety. Social media usage became higher in those under 30, students and also retired people. The spread of misinformation on social media in regards Covid-19 also can lead to increased anxiety. It was evident in the survey that in general there was an increase in the use of social media with Instagram being the most popular app. It became evident that there was also a change in the use of social media, as people are sharing more about their personal lives and also using social media as a form of entertainment. It was found from the survey, that students were feeling guilty about how they spend their time during restrictions, with a lot of people comparing themselves to people on social media who were showing themselves being productive with their spare time, which in turn leads to feelings of anxiety and guilt.

**What are some coping strategies being used during Covid-19 restrictions?**

It was found in the systematic literature review that some coping strategies people were using during Covid-19 were communicating with family and friends, using technology and social media as forms of entertainment as well as having a routine which included some physical exercise or meditation. It was also revealed that people were using negative coping strategies such as ignoring the news and sleeping, drinking and smoking more. It was evident from the survey that students are using coping mechanisms such as communicating platforms like Zoom, WhatsApp and social media platforms to stay in contact with friends and family. Other coping mechanisms such as online mental health resources, meditation apps and gaming were also used by students.

**How has the use of technology changed during Covid-19?**

From the survey it became clear that there is a slight shift in the way technology is being used during the Covid-19 period. Many deem their laptop just as essential or more essential than their mobile, as it is now needed to work, study and socialise from home. Many now use their laptop for things they never imagined before, such as collaborating for group work, doing it online presentations and much more. Many people had to learn how to use video conferencing technology such as Zoom and
Microsoft teams as well. Students now use YouTube and video streaming platforms to follow tutorials for many things that were once done in person such as gym classes.

Is technology being used as a coping mechanism during Covid-19?

From the survey it become clear that students are using technology as a coping mechanism during Covid-19. For many students, the only option to stay in contact with family and friends was through technology, messaging apps and social media. Students also turned to technology for coping mechanisms such as meditation, yoga and fitness apps to help with their mental well-being. Not only this but students turned to technology for their doctor and therapy appointments, which would not have been possible without technology. However, many are not turning to technology due to its detrimental effects such as fatigue due to long screen time hours, scaremongering among misinformation shared online comparing themselves to others on social media.

From the findings of my research paper, the answer to my main research question, “Is technology and social media adding to or alleviating the mental health effects of an online based learning environment during Covid-19?”, has become clear. Technology and social media are both adding to and alleviating the mental health effects of an online based learning environment. It is adding to the mental health effects due to studying and taking classes in an online learning environment, without the face-to-face contact with students and professors. As well as this, hours of screen time can cause fatigue and headaches. Stress is also being faced by students, in terms of not having adequate hardware or internet access to sustain connected to the live classroom. Collaborating in group assignments are also proving to be difficult without face-to-face interaction. Social media is also adding to the mental health effects as students are spending more time scrolling on social media apps, which is causing a lot of anxiety as students compare themselves to others online. There is also stress being caused by scaremongering and spread of misinformation surrounding the Covid-19 situation.

Technology and social media are also alleviating the mental health effects of an online based learning environment during Covid-19, as technology allowed college classes and work to still go ahead, despite the circumstances. Technology allowed students to stay in contact with each other and have real time video phone calls and messages. Technology was used in new ways, such as to do yoga and fitness workouts, and also take doctor and therapy appointments. Students were able to access mental health
resources online. Video conferencing software allowed for students to socialise, collaborate and carry out assignments remotely, all of which help with student’s mental wellbeing.

Although the Covid-19 restrictions aren’t ideal for students, with the use of technology and social media, some normality was allowed to continue to remain connected with others and continue studying and working remotely. It is also clear that students should know how to look after their mental wellbeing, and know when to take a step back from social media and technology when it starts to affect them. Learning about where to find resources and help to aid with their mental being is also extremely important to avoid induced stress and anxiety.

This research adds to existing research in this area, particularly in regards my systematic literature review. It brings together and compares the existing research that has been done. My primary research also adds to existing research as it focuses on the use of technology and its importance during this time of crisis. This research can be used in student counselling and support services for students, as it reports what can trigger mental health issues for students during this time, and also what students use to deal with mental health issues.

5.2 Conclusions
The main objective of this paper was to answer my main research question, “Is technology and social media, adding to or alleviating the mental health effects of an online based learning environment during Covid-19?”. During the Covid-19 crisis, people were forced to use technology like never before, in order to complete various day to day tasks such as working, attending classes, studying and even going to the gym. As a result of this, there was a lack of face-to-face social interaction for many, including students. The purpose of this paper was to investigate the mental health effects this has on students. In order to answer the research question, I reviewed existing literature on online learning, social media and mental health, social isolation and mental health and communicating during a pandemic. As Covid-19 restrictions are relatively new, there was a lack of relevant research done on this topic. I explored existing studies and their findings in the form of a systematic literature review. As a result of some gaps found in existing research, I conducted primary research in the form of a survey, which aided answering sub research questions and my main research question. The research found that technology and social media is both adding to and alleviating the mental health effects of an online based learning environment. It is adding to the mental health effects due to lack of face-to-face interaction with peers,
as well as increased difficulty to collaborate with peers. Increased use of social media during this time is also contributing to increased anxiety and depression. However, it was also found that technology and social media is also alleviating the mental health effects during this time as technology allowed university classes and work to remain in place in the form of online classes. Communication tools such as Zoom, WhatsApp and social media platforms allowed students to stay in contact with family and friends and continue some normality in life during this time. Students should also be educated on how to look after their mental wellbeing during this time of increased social interaction.

In terms of limitations for this research, some of the limitations include lack of participants in my primary research. The study would benefit from a larger demographic of respondents for the survey. The Covid-19 pandemic proved to be the biggest challenge of this research, which had an impact on delaying the ethical approval from the ethics committee for my primary research, along with lack of face-to-face contact with my professors and peers. In terms of future research, this study would benefit from a follow up study with the participants. As the Covid-19 pandemic is still ongoing, the exact picture of the effects of the restrictions has not yet emerged. A follow up study which compares the mental health effects of genders would also be beneficial.
Appendices

Appendix 1: Approval from Ethics Committee

TCD REC WebApp: The status of “Is technology adding to or alleviating the mental health effects of moving to an online based 3rd level learning environment during Covid-19?” (860) has been updated by the Committee

This message was not sent to spam in accordance with your organisation’s settings.

Move to spam

The status of “Is technology adding to or alleviating the mental health effects of moving to an online based 3rd level learning environment during Covid-19?” has been updated by the Committee.

Title: “Is technology adding to or alleviating the mental health effects of moving to an online based 3rd level learning environment during Covid-19?”

Applicant Name: Aoife Naughton

Submitted by: Aoife Naughton

Academic Supervisor: Nessa Brounhan

Application Number: 2020/2016

Result of the REC Meeting: Approved

The feedback from the Committee is as follows:
The comments have been addressed and we wish you success with your study; however, you must submit a copy of the proposal with the questionnaire included (research ethics forms.xlsx) as only a link to the online questionnaire has been provided. There is no need for the proposal to be reviewed.

Please note that the statements regarding deletion of the data by May 2021 do not adhere to TCD policy on good research practice, and will likely make it impossible to prepare any publication based on the study. It is normal to retain data for a period for research integrity purposes; however, we do not require this for student projects.

The application can be viewed here:

https://tcdhost.tcd.ie/research_ethics/?Handle/1950
Appendix 2: Survey Questions

Q1. Are you or were you a third level student during the isolation period of the Covid-19 restrictions?

☐ Yes
☐ No

Q2. In what country were/are your studies taking place?

___________________________________________________________________

Q3. Did your academic studies revert to online classes during Covid-19 restrictions?

☐ Yes, solely online
☐ A mix of online and face to face
☐ No

Q4. If yes, what were the main challenges you faced/are facing during this time being off-campus?

___________________________________________________________________

Q5. Do you think there has been any advantages to learning online during the Covid-19 restrictions?

☐ Yes
☐ No

Please give a reason for your answer

___________________________________________________________________
Q6. What technology equipment do you deem essential during the Covid-19 restrictions?

☐ Mobile Phone
☐ Laptop
☐ Television
☐ Interactive speaker e.g Alexa
☐ Games console
☐ Other, please specify

Q7. What, if any, new technologies did you use during the pandemic that you may not have used pre Covid-19 restrictions?

Q8. Did you use technology in a way you may not have used it before, in order to do a task/tasks you were unable to do face to face do due to the Covid-19 restrictions?

☐ Yes
☐ No
☐ If yes, please explain in detail?

Q9. Did your social media intake increase or decrease during the Covid-19 restrictions?

☐ Increase
☐ Decrease

If increase, please give a rough estimate of how much your intake increased
Q10. What were/are your most used technology-based forms of entertainment during the Covid-19 restrictions? Please drag each option to rank in order of most used to least used.

1. Social media
2. Netflix
3. TV
4. Gaming
5. Other, please specify

Q11 What were/are your most used social media platforms during the Covid-19 restrictions? Please drag each option to rank in order of most used to least used.

1. Instagram
2. Facebook
3. Snapchat
4. Twitter
5. YouTube
6. Other, please specify

Q12. Do you think there was a change in the way social media was utilised during the Covid-19 restrictions?

☐ Yes
☐ No

If yes, please give a reason for your answer
Q13. Do you use any forms of technology to look after your mental well-being during the Covid-19 restrictions?

☐ Yes
☐ No

If yes, please describe what technology?

________________________________________________________________

Q14. Did social media ever make you feel guilty about how you were spending your time during the Covid-19 restrictions? Please give a reason for your answer.

________________________________________________________________

Q15. Do you think technology helped with your mental well-being in any way during the Covid-19 restrictions? Please give a reason for your answer.

________________________________________________________________

Q16. Do you think technology was detrimental to your mental well-being in any way during the Covid-19 restrictions? Please give a reason for your answer.

________________________________________________________________
References


