Did the COVID-19-Related Shift to Online Schooling Influence Students’ Mental Wellbeing? A Quantitative Study on Level 4 Students at MCAST

Charmaine Gauci*, Renzo Kerr Cumbo, Ayrton Zarb
Corresponding Author: Charmaine.Gauci@mcast.edu.mt
*Institute of Community Service, MCAST

Abstract: Following a global increase in daily new cases, hospital admissions, and mortality rates, the World Health Organization (WHO) declared COVID-19 a pandemic on 11th March 2020. To mitigate the spread of the virus, non-essential shops, schools, and higher education institutions around the world were temporarily closed and learning was conducted online. This study investigates the impact on the mental health and wellbeing of level 4 students undertaking further education in a vocational education and training (VET) institution, the Malta College of Arts, Science, and Technology (MCAST) which offers further and higher education.

Data was collected using a quantitative approach through an online questionnaire distributed to MCAST students from different institutes which were invited to participate in this study. According to the findings of this study, students suffered from a lack of attentiveness and motivation for their studies, as well as lower self-esteem during this shift. Moreover, several variables have been identified to correlate with the degree of distress reported by participants, in particular the daily hours of online activities and the students’ wellbeing prior to the shift to virtual learning. This study proposes strategies that can limit such disadvantages of online learning while proposing techniques that could be adopted following the participants’ stated desire for future hybrid forms of education.

Keywords: COVID-19; mental wellbeing; online education; psychological effect; VET higher education

Introduction

The sudden shift to web-based education left a negative effect on students’ mental wellbeing (Bezzina et al. 2021), including social isolation, anxiety, stress, and fear (Cao et al. 2020). A study conducted by researchers at the San Diego State University confirmed that teenagers, especially females, who spend more than seven hours a day using technological devices tend to be more susceptible to developing symptoms of anxiety or depression (Twenge et al. 2018). Furthermore, poor network connectivity, limited class participation, and apathy for online learning were all challenges that stakeholders within the educational system had to encounter and deal with (Muganga et al. 2021). Therefore, educational institutions should investigate such issues to provide more means of support to students in the current challenging times of the pandemic.

Background to the Subject

The outbreak of the Coronavirus Disease 2019 (COVID-19) has rapidly and significantly impacted every aspect of our lives since its first identification in Wuhan, China, in December 2019 (WHO 2021). Around the world, health measures were imposed intended to contain
the spread of the virus, including social distancing measures and lockdowns (Steven Bernard et al. 2022).

The World Health Organization (WHO) declared a state of pandemic on 11th March 2020, following a surge in cases that led to an unprecedented health crisis and severe socio-economic consequences around the globe (WHO 2021). As the COVID-19 pandemic continued to spread across the world, the majority of educational institutions were forced to close down and classes shifted online to limit the spread of the virus by eliminating close contact among students (WHO 2021). Locally in Malta, all schools were closed and shifted online from the 13th of March 2020. Moreover, higher education institutions, such as the Malta College of Arts, Sciences and Technology (MCAST), continued delivering most of their education online in the following scholastic year following a surge in local cases (Figure 1) (CEDEFOP 2021).

![Seven-day moving average of daily confirmed cases](image)

*Figure 1: Seven-day moving average of daily confirmed cases (Ritchie et al. 2022)*

The closure of universities, colleges, and schools, as well as the sudden shift to virtual learning, directly impacted teachers, students, and parents (Costantino et al. 2020). While educators had to adjust their lesson content, material, and teaching approaches, students had to adapt quickly to utilising virtual platforms to receive tuition (Barrot, Llenares and del Rosario 2021).

*Purpose of the Study*

The aim of this study is to investigate and analyse the mental wellbeing of MCAST students, specifically those following courses at level 4 during the scholastic year 2020/2021 while lessons were being held online as health restrictions were still in place. This study is the first of its kind to examine local vocational education and training (VET) students’ response to online learning and its impact on their daily lives.

Following the collection of data using online questionnaires delivered directly to students following courses within different institutes, this study examined the responses to identify the factors affecting the degree of distress among students, as well as identifying patterns in the dataset. Moreover, this study will help suggest improved learning conditions and
arrangements that could be implemented by college management and lecturers to provide the best possible support for students during the current pandemic or other future crises.

Literature Review

The impact of online learning on students’ academic and mental wellbeing has been a focal point in the education literature recently following the sudden shift to online schooling due to the adverse effects of the pandemic. Several academics and researchers in the field of education have investigated the impact of online schooling on students’ wellbeing, and several findings have been proven.

Online Schooling

The concept of distance learning dates to 1800 at the University of Chicago where correspondence was sent between a teacher, located in one location, and a learner who was in another one (Pregowska et al. 2021). However, distance learning grew substantially as computer and electronic mail technologies bloomed in the 1970s and 1980s (Keegan 1980). The commercialisation of the internet in 1991 became a driving factor for developing remote education and marked a watershed moment in the rapid growth and expansion of online learning (Rovai 2009). Therefore, online education is defined as a learning format that does not require students to be physically present in a traditional classroom environment (Gilbert 2015).

McBrien et al. (2009) argue that online education has become more accessible due to significant breakthroughs in technology. Since then, educational institutions, both in the United States and worldwide, have not only offered online courses but also complete online degree programmes (Wallace 2003). According to Dawan (2020:260-261), online education can be defined as:

learning experiences in synchronous or asynchronous environments using different devices (example mobile phones, laptops, etc.) with internet access. In these environments, students can be anywhere (independent) to learn and interact with instructors and other students.

Online Education Prior to COVID-19

In today’s competitive business environment, educational institutions use information and computer technology (ICT) to reach a larger number of students while attempting to maintain the quality and interaction of face-to-face education (Oviawe 2016). Television, videoconferencing, Skype, Moodle, and Blackboard are just a few of the ICT technologies employed in e-learning (Shikham and Muller 2021).

Platforms such as the Massively Open Online Courses (MOOC) were recently developed which comprise university-based and corporate-based online courses to enhance the accessibility of higher education for broader sectors of the public (MOOC 2021). In fact, according to data collected by the Pew Research Center in 2011, 89% of four-year colleges and universities offered entirely online, blended online, or other types of distance education in their 2010-11 academic year (Parker et al. 2013). Additionally, universities’ online programmes may leverage a range of technological breakthroughs to improve the interaction between teachers and students, as well as among students in general (Bell et al. 2013).

The National Center for Educational Statistics (NCES) identifies several leading causes influencing higher-education institutions to provide online courses:
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1. To address students’ requests for flexible timetables (68%);
2. To allow students who would not otherwise be able to attend college to study (67%);
3. To increase the number of courses provided (46%);
4. To increase students’ admission rates (45%) (Prasad et al. 2008).

An online learning community can provide a sustainable setting for students to learn effectively through the development of cognitive and social presence, whereby the involvement of the teacher is crucial for balancing both presences (Garrison et al. 1999). In his study on adult online learning, Keegan (1980) concurs with Garrison et al. (1999), acknowledging the importance of the teacher as the catalyst that initiates the community development process. In fact, Finch and Jacobs (2012) highlight several advantages of online education, in particular:

1. Decreasing travel time and expenses;
2. Improving access and collaboration options with global expert professionals;
3. Giving students flexible options to access their courses; and
4. Permitting topic and content changes.

Moreover, Roach and Lemasters (2006) believe that online education has enabled students to master the role of employing additional resources to develop their potential as autonomous learners. Gautam (2020) also believes that online learning leads to an element of efficiency, cost-effectiveness, and 24-hour access, but notes that there are disadvantages too, including technical challenges, lack of engagement, and the lack of training of several stakeholders in the field of education.

According to Strayer University, one of America’s largest accredited adult universities and a major provider of online education, there are several advantages of online learning, mainly flexibility and greater accessibility. However, there are concerns such as data protection, in particular students’ personal data when they are using online portals with their computers or smartphones (Luxatia International 2021.).

Tallent-Runnels et al. (2006) identified the following users of distance learning:

1. Primarily non-traditional older students attending college;
2. Highly driven students, goal-oriented and enthusiastic about achieving a positive learning experience via online education; and
3. Students who typically played prominent roles in their respective communities.

ICT poses several limitations for the learning and evaluation processes, including the learners’ exclusion from resources, assistance and peers, absence of face-to-face connection with course coordinators, and delayed response time (Masino 2011). Although accessibility and student involvement may be an essential aspect for online learners, additional factors may affect the effectiveness of the lesson, such as the design and quality of the course, the degree of interaction between students and learners, and the assessment methods adopted (Tallent-Runnels et al. 2006).

**Online Education During COVID-19**

With the closure of schools, colleges, and universities, the importance of having an adequate ICT infrastructure and being prepared to hold lessons online became essential (Lorente et al. 2020). COVID-19 has rapidly and unexpectedly shifted education into a techno-economic culture, with government support measures to minimize the impact of the change on the traditional learning process (Gurukkal 2020).
The switch from face-to-face to online education brought about by the pandemic also enabled faculties to implement advanced technology tools in their teaching that benefit students (Isaeva et al. 2020). Nemetz et al. (2017) believe that while the success of face-to-face teaching is dependent on regular attendance, online programmes rely on students’ participation and interaction during assignments. Hence, the efficacy of both online and face-to-face learning is determined by the curriculum structure, delivery method, and academic achievement.

Li and Lalani (2021) claimed that COVID-19 changed the status of learning in the 21st century in a way that was not anticipated in many countries. As a result, their working personnel and students were not adequately prepared for this drastic change. Teymori and Fardin (2020) agree with this statement and add that for schools and colleges to thrive during the pandemic, it required the technical infrastructure to be adequately maintained. Carey (2020) adds that several institutes throughout the world have completely digitalized their operations in response to the crisis since online education emerged as the decisive solution to the interruption created by the pandemic.

According to a survey conducted by Schul-Barometer (School Barometer) between March and April 2020 among Austrian, Swiss, and German students aged 10 to 19 years, their weekly learning time during the COVID-19 lockdown was reduced by 4 and 8 hours a week respectively compared to when schools were open (Huber et al. 2020). In fact, participating in online learning for an extended period can cause asthenopia symptoms such as headaches, blurred vision, and eye fatigue. According to Cao et al. (2020), there is substantial evidence that students’ anxiety increased during the COVID-19 crisis.

Despite these challenges, online learning brought about several positive aspects. In fact, Ayebi-Arthur (2017) concurs with Gautam (2020) about the advantages of online schooling when acknowledging that online education can be an effective tool for overcoming unforeseen challenging situations. To minimize the drawbacks, Pinto (2020) recommends encouraging timid students to participate with the aim of improving online education, as well as persuading them to attend online classes. The author adds that online learning during the pandemic stimulated introverted students to participate and increase attendance but, similar to Gautam (2020), the researcher acknowledges that online learning creates a lack of social interaction which has a negative impact on students.

Concept of Wellbeing

The World Health Organization (WHO) defines wellbeing as,

...a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity (WHO 2006: 1).

Despite early research focusing on the two distinct approaches to the topic—hedonic (Young 1952) and eudaimonic wellbeing (Rogers 1961)—it is now commonly acknowledged that wellbeing is a multidimensional term (Wills et al. 2009).

Anxiety, somatic symptoms, and negative effects were revealed to be driving causes of ill-being, along with a personal sense of low competence and external influences such as unfavourable social and economic factors (Headey et al. 1984). The authors add that wellbeing is linked to personality traits like extraversion, optimism, and a general perception of self-competence. Furthermore, the concept of quality of life in connection to happiness was debated, with the argument that true wellbeing should be determined by the individual (Diener et al. 1999).
In the United Kingdom, three areas of national wellbeing were established following a 6-month national debate focused on:

1. Individual wellbeing;
2. Aspects that directly impact individual wellbeing (such as health, relationships, place of work and the living environment); and
3. Contextual dimensions (such as the economy and natural environment) (Beaumont 2011).

According to Knight and McNaught (2011), the definition of wellbeing goes beyond the concept of individual objectivity but encompasses several aspects of living. The authors’ approach shifts the focus away from health and focuses on one’s lifestyle. This radical departure suggests a fascinating take about individual wellbeing, in that numerous factors can play a significant role in an individual’s health and wellbeing (Knight and McNaught 2011; Shin and Johnson 1978).

Students’ Wellbeing Prior to COVID-19

Student wellbeing can also be defined as a population-level concept that encompasses positive emotion and an individual’s intellectual ability to cope with the challenges of day-to-day living and their academic journey (Barkham et al. 2019). Wellbeing serves a multifaceted role, being both a predictor of student outcomes, such as academic achievement (El Ansari and Stock 2010), as well as an outcome within itself which is influenced by several factors (Kim and Kim 2017). In their article, Stevenson et al. (2008) imply that each student has their own “coping reservoir” with an internal structure made up of temperament, personality traits, as well as their preferred coping technique. This can result in either beneficial or negative results, such as resilience or burnout, which are indicators of a student’s wellbeing.

In particular, students at higher education institutions typically have to handle a range of duties and surroundings while interacting with a variety of people, including peers and instructors (McLean and Andrews 1999). Moreover, the authors believe that while it is generally physically easier to access support services while studying due to facilities being accessible on campus, the broader societal challenges that surround these services must be considered in order to provide effective support. The Wellbeing Higher Education Report corroborates such conclusions and identifies the challenges to understand the wellbeing of higher education students due to the concept’s complexity. This reflects Knight’s and McNaught’s (2011) argument that wellbeing is an existential experience that is profoundly personal.

Corrigan et al. (2016) add that, ultimately, fear of being socially marginalized and stigmatized might hinder students from seeking help and address their mental health issues. Not only are students unwilling to resort to support services because of the social ramifications that they fear they will experience, but research has also revealed that they are concerned about disclosing mental health issues on their social media platforms. Resilience has been identified to be an antecedent of student wellbeing, having a significant relation to personal happiness as well as a negative correlation with anxiety, depression, and stress (Barkham 2019).

Students’ Wellbeing During COVID-19

With the emergence of the pandemic, several academic institutions that were formerly reluctant to shift their traditional pedagogical approach online now had no choice but to switch to virtual teaching and learning (Dhawan 2020). Murphy and Croteau (2020)
claimed that students were attending emergency online classes but were not necessarily receiving properly designed online instructions.

Adolescence has been identified as a critical period for the formation of social interactions which is necessary for peer relationships (Van Hoorn et al. 2016). Laco and Steinber (2019) believe that it is during this phase that youths transition from spending most of their time with parents to being more influenced by and spending time with their peers. Specifically, maintaining social connections is believed to be even more essential for adolescents’ wellbeing than it is for adults because youths achieve most of their meaning from their social relationships (Damon et al. 2003; Kern et al. 2015).

The Maltese government announced several measures in order to prevent the spread of the pandemic, including the closure of all schools and childcare centres (Times of Malta 2021). On 28th March 2021 it was confirmed that all educational institutions would remain closed until the conclusion of the academic year, and that online education would be implemented for continuity’s sake (Times of Malta 2021). Irawan et al. (2020) believe that one of the factors contributing to students’ stress levels was the pressure of online class duties which required students to use online media that they had only learned recently about and which they had to understand immediately. According to Valente et al. (2007), mental health issues continue to be the most significant obstacle to academic success. This may lead to a reduction in students’ motivation, concentration, and social interaction, all of which are important factors to succeed in education (Nasir et al. 2018). Such a radical shift required the intervention of counsellors to provide support, such as the services run by the Malta Trust Foundation, which provided psychosocial support to 1,500 students and their families during the pandemic in 2020 (Times of Malta 2021).

In a cross-sectional nationwide study among Chinese students, Lathabhavan and Griffiths (2020) discovered that acute stress (34.9%), anxiety (21.1%), and symptoms of depression (11.0%) were common symptoms experienced by students during the pandemic. Research has shown that low motivation and self-regulation qualities in online learning may result in students spending more time carrying out assignments, submitting assignments late, or delivering overall substandard work (Albelbsi and Yusop 2019).

Furthermore, according to Nasir (2020), students’ mental and emotional wellbeing was primarily negatively affected as a result of a loss of connection with their peers and tutors. Furthermore, Chew et al. (2020) observed that fear, anxiety, and depression were common psychological symptoms experienced by students in past pandemics. Students’ capacity to absorb information is limited in general, and a combination of learning methods is likely to cause fatigue, this while compromising their ability to learn new material adequately (Aguiler-Hermida 2020).

**Methodology**

The impact of online learning during the pandemic (March 2020 till June 2021) on students’ mental wellbeing is a topical subject and at the moment there is no consensus among researchers about its effects. The adoption of quantitative tools to study the research question will allow the results from this study to be generalised to a whole population or a sub-population because it involves the larger sample which is randomly selected” (Carr, 1994). A quantitative research approach is concerned with quantifying and analysing variables to draw conclusions. Aliaga and Gunderson (2006) define quantitative research methods as the process of gathering data in numerical form and evaluating it using mathematical tools, particularly statistics. According to Rovai et al. (2012), quantitative researchers view the world as being external in nature and that there is an objective reality that is independent of any observations.
Research Rationale

Since there is no agreement among researchers about the impact of online schooling on students’ mental wellbeing, this study aims to contribute to the literature on the subject by being the first study performed locally among higher education VET students. Using quantitative tools, this study investigates the impact of shifting to online forms of education on students’ wellbeing, as well as identifying patterns in the dataset collected. To this extent, the hypothesis being tested are whether:

\[ H_0: \text{Online schooling had no impact on students’ mental wellbeing} \]
\[ H_{A}: \text{Online schooling had an impact on students’ mental wellbeing} \]

Research Design

Primary data was collected using online self-completion questionnaires distributed to participants who are registered at MCAST within its various institutes among students following courses at level 4 (Malta Qualification Framework Level 4) during the scholastic year 2020/2021. This approach is in line with the ethical policies and regulation at MCAST, as well as past approaches adopted by the authors identified in the literature, intended to reduce biases and help participants feel at ease when discussing personal details about their mental wellbeing.

The key advantage of a survey research is that it provides information on a large group of people with minimal effort while also being cost-effective. Furthermore, such a technique enables researchers to examine a broader range of behaviours and other factors than a standard observation study (Marczyk et al. 2008).

Based on a 90% confidence interval and margin of error of 10%, a sample size of 244 responses was necessary, as based on a population of 2,279 registered level 4 MCAST students during the scholastic year 2020/2021. The distribution period was between the 5th and 23rd of August 2021 while the students were on their summer break. Once the data was collected, it was then converted into a Microsoft Excel worksheet for data cleaning and data transformation to be performed, followed by an analysis of the remaining dataset. Ultimately, correlation tests were performed on the remaining data using the Statistical Package for the Social Sciences (SPSS) to establish possible relationships between the different variables.

Research Instrument and Format

A 26-item online survey was prepared to collect data from the target participants to assess their perceptions, emotions, and academic experiences following the transition from in-class lectures to online learning. The questionnaire aimed to investigate key features of imposed online learning and its impact on students.

The survey was created using Google Forms and delivered to students across all level 4 MCAST programmes via a circular email sent by MCAST’s registrar. The questionnaire also included socio-demographic questions as well as students’ perceptions on the effectiveness, benefits, and challenges of online learning, and the impact on students’ psychological wellbeing to examine trends in the data.

The questionnaire was designed and distributed in the English language and, during this period, a total of 115 responses were received—a call-back rate of 5%. To protect participants from any risk of harm and/or discomfort, the questionnaires were only distributed following ethical clearance from the supervisor assigned to host the study. Furthermore, students were informed that they were free to skip any questions which they felt uncomfortable answering.
Empirical Plan

Following the collection of the raw data, cross-sectional tests were performed intended to answer the research hypotheses. The dependent variable which quantifies participants’ mental wellbeing during online lessons was quantified following a direct question to participants about the overall impact of the online learning experience on their mental wellbeing. Participants were provided with a five point Likert scale, ranging from extremely negative to extremely positive.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Possible responses</th>
<th>Data transformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of participant</td>
<td>16 – 18 years, 19 – 21 years, 21 – 23 years, 24+ years</td>
<td>Median value was taken from the range, while for the last open-ended category a value of 25 was inputted</td>
</tr>
<tr>
<td>Likert scales</td>
<td>Very comfortable, Comfortable, Neutral, Need to ask for assistance, Struggle to use</td>
<td>Very comfortable = 5, Comfortable = 4, Neutral = 3, Need to ask for assistance = 2, Struggle to use = 1</td>
</tr>
<tr>
<td>Hours of daily online lessons, study, and activities</td>
<td>Less than 2 hours daily, 2 – 4 hours daily, 5 – 8 hours daily, More than 8 hours daily</td>
<td>Median value was taken from the range, while for the last open-ended category a value of 8 was inputted</td>
</tr>
<tr>
<td>Wellbeing Factors</td>
<td>Anxiety, Motivation, Stress, Fatigue, Ability to focus, Self-confidence, Bullying, Isolation</td>
<td>One point for every factor identified by the respondent</td>
</tr>
<tr>
<td>Online lessons before the pandemic</td>
<td>Yes, Partially (online some units), No</td>
<td>Yes = 1, Partially (online some units) = 0.5, No = 0</td>
</tr>
<tr>
<td>Adequate equipment available</td>
<td>Yes, Partially, No</td>
<td>Yes = 1, Partially = 0.5, No = 0</td>
</tr>
</tbody>
</table>
Correlation tests will be examined using the Spearman correlation test since the data was not normally distributed. The interpretation applied in the results follows Gibb's (2010) interpretation of correlation coefficients in Table 2.

<table>
<thead>
<tr>
<th>= 1</th>
<th>≥ 0.70</th>
<th>≥ 0.50</th>
<th>≥ 0.30</th>
<th>= 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perfect correlation</td>
<td>Strong correlation</td>
<td>Moderate correlation</td>
<td>Weak correlation</td>
<td>No correlation</td>
</tr>
</tbody>
</table>

**Table 2: Possible correlation coefficients**

**Methodological Shortcomings**

The sample size collected was relatively small (n = 115) and participants were recruited through an online questionnaire since the students were being contacted during the summer holidays. Furthermore, the composition of the sample varied from the population in terms of age, gender and the institute in which students were studying, as depicted in Figure 2. Since a higher percentage of females participated in the study, it might cause biased results since females are likely to develop more stress symptoms compared to the other genders, as was identified in prior pandemic research (Xu et al. 2011). In fact, most participants (70.43%, n = 81) identified as female, with the remainder identifying as male (26.96%, n = 31) and non-binary (1.74%, n = 2). The remaining respondent preferred not to state their gender (0.87%, n = 1).

![Sample vs Population Comparison](image)

**Figure 2: Comparison between sample and population**
Research Findings

Dataset Overview

In total, 115 responses were collected during the distribution period among students who are following a level 4 course at one of the several institutes at MCAST. Table 3 represents the Descriptive Statistics Output table which summarises the statistical distribution of each quantitative variable analysed.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Median</th>
<th>Kurtosis</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE</td>
<td>17</td>
<td>25</td>
<td>20</td>
<td>20</td>
<td>-0.48</td>
<td>0.61</td>
</tr>
<tr>
<td>ONLINE_BEFORE</td>
<td>0</td>
<td>1</td>
<td>0.17</td>
<td>0</td>
<td>1.29</td>
<td>1.78</td>
</tr>
<tr>
<td>WELLBEING_BEFORE</td>
<td>0</td>
<td>8</td>
<td>2.06</td>
<td>1</td>
<td>-0.17</td>
<td>0.96</td>
</tr>
<tr>
<td>DAILY_HOURS</td>
<td>1</td>
<td>8</td>
<td>6.17</td>
<td>6.5</td>
<td>1.29</td>
<td>-1.43</td>
</tr>
<tr>
<td>WELLBEING_AFTER</td>
<td>0</td>
<td>7</td>
<td>3.15</td>
<td>3</td>
<td>-1.19</td>
<td>0.15</td>
</tr>
<tr>
<td>ADEQUATE_EQUIPMENT_BEFORE</td>
<td>0</td>
<td>1</td>
<td>0.89</td>
<td>1</td>
<td>3.84</td>
<td>-2.11</td>
</tr>
<tr>
<td>ADEQUATE_EQUIPMENT_AFTER</td>
<td>0</td>
<td>1</td>
<td>0.92</td>
<td>1</td>
<td>6.8</td>
<td>-2.66</td>
</tr>
</tbody>
</table>

*Table 3: Descriptive Statistics Output*

Preliminary findings in Table 3 detect a deterioration in participants’ mental wellbeing when comparing before the shift to online schooling and during online lessons. Still, such a conclusion requires statistical analysis to be compared and be generalised to the whole population. Moreover, Table 3 shows that, overall, most participants had adequate equipment to join online lessons. This was improved by the end of the online schooling programme, possibly following government schemes to help students with their learning, as well as households investing in more electronic equipment. Table 3 also displays the mean and median daily hours spent online by students during online schooling, including online lectures, study, and course work. Results show that, on average, students spent around 6 hours a day in online school-related activities.
Analysis

80% of the participants (n = 92) stated that they did not suffer from or experience mental health issues before the pandemic, while only 20% claimed they had. Table 4 summarises the factors that comprise participants’ score for mental wellbeing during online lessons.

<table>
<thead>
<tr>
<th>Wellbeing (After)</th>
<th>Responses (N)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to focus</td>
<td>44</td>
<td>14.5%</td>
</tr>
<tr>
<td>Anxiety</td>
<td>52</td>
<td>17.2%</td>
</tr>
<tr>
<td>Bullying</td>
<td>15</td>
<td>5.0%</td>
</tr>
<tr>
<td>Fatigue</td>
<td>23</td>
<td>7.6%</td>
</tr>
<tr>
<td>Motivation</td>
<td>34</td>
<td>11.2%</td>
</tr>
<tr>
<td>Self-confidence</td>
<td>42</td>
<td>13.9%</td>
</tr>
<tr>
<td>Social isolation</td>
<td>24</td>
<td>7.9%</td>
</tr>
<tr>
<td>Stress</td>
<td>69</td>
<td>22.8%</td>
</tr>
<tr>
<td>Total</td>
<td>303</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Table 4: Participants’ composition of mental wellbeing score

The distribution of students’ wellbeing across genders is displayed in Figures 3 and 4 which display that, overall, participants’ wellbeing slightly deteriorated during online schooling. Moreover, the mean score among male participants was already high prior the shift to online schooling, meaning that male students were already suffering from distress (Figures 3 and 4). Still, females experienced a sharp increase in stress and poor mental wellbeing, registering a 63% increase in this regard.

Figure 3: Females’ wellbeing scores 1 before and after online schooling

1 The wellbeing score was constructed following the instructions in Table 1 which assign a point for every psychological repercussion experienced by the participant.
Figure 4: Males’ wellbeing scores before and after online schooling

Table 5: Participants’ wellbeing before and during online schooling

When performing the Chi-square test to determine the relationship between male and female students and its impact on mental health, the relationship between these variables was proven insignificant, leading to the conclusion that there is no significant association between the impact this shift to online schooling had on students’ mental wellbeing and the gender of the participant (Table 6).
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### Table 6: Chi-squared test determining the relationship between gender and mental wellbeing

<table>
<thead>
<tr>
<th>Gender</th>
<th>Extremely negative</th>
<th>Negative</th>
<th>Neutral</th>
<th>Positive</th>
<th>Extremely positive</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>Count</td>
<td>3</td>
<td>4</td>
<td>11</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>% within Gender</td>
<td>9.7%</td>
<td>12.9%</td>
<td>35.5%</td>
<td>22.6%</td>
<td>19.4%</td>
</tr>
<tr>
<td>Females</td>
<td>Count</td>
<td>10</td>
<td>25</td>
<td>11</td>
<td>18</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>% within Gender</td>
<td>12.3%</td>
<td>30.9%</td>
<td>13.6%</td>
<td>22.2%</td>
<td>21.0%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>13</td>
<td>29</td>
<td>22</td>
<td>25</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>% within Gender</td>
<td>11.6%</td>
<td>25.9%</td>
<td>19.6%</td>
<td>22.3%</td>
<td>20.5%</td>
</tr>
</tbody>
</table>

In addition, the degree of mental health and poor wellbeing varies among different age cohorts (Figure 5). In particular, the younger cohorts suffered the most due to this shift. Conversely, mature students were less affected, possibly due to being more experienced in dealing with such life challenges and difficult working environments.

**Figure 5:** Distribution of wellbeing scores across the different age groups of the participants

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**Table 6:** Chi-squared test determining the relationship between gender and mental wellbeing
Moreover, the impact of online learning on the mental wellbeing of level 4 MCAST VET students depends on the students’ prior health condition. In particular, results from the Spearman correlation test prove that those individuals who self-reported unwell mental health before the shift to online schooling were the most likely to experience anxiety, loneliness, and other mental health problems (Figure 6). Such results are significant, registering at 95%, with a 5% margin of error.

<table>
<thead>
<tr>
<th>Correlations</th>
<th>WELLBEING (AFTER)</th>
<th>WELLBEING (BEFORE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spearman’s rho</td>
<td>WELLBEING (AFTER)</td>
<td>Correlation Coefficient</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>115</td>
</tr>
<tr>
<td>WELLBEING (BEFORE)</td>
<td>Correlation Coefficient</td>
<td>.189*</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.044</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>115</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).

**Figure 6:** Spearman correlation between wellbeing (before) and wellbeing (after)

Such a variance in participants’ wellbeing is not dependent on whether online learning was used before the mandatory shift. Irrespective of whether students had experienced partial, full or no online lessons before the compulsory shift to online learning, participants experienced a mean score for wellbeing of between 2 and 3. However, the Spearman correlation output in Figure 7 displays a positive and significant relationship between the number of daily hours of online schooling and the level of mental distress experienced by participants. Therefore, results prove that the higher the number of daily hours of lectures for study and assessment purposes, the higher the likelihood that participants will be reporting higher levels of stress.

<table>
<thead>
<tr>
<th>Correlations</th>
<th>WELLBEING (AFTER)</th>
<th>DAILY HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spearman’s rho</td>
<td>WELLBEING (AFTER)</td>
<td>Correlation Coefficient</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>115</td>
</tr>
<tr>
<td>DAILY HOURS</td>
<td>Correlation Coefficient</td>
<td>.217*</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.020</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>115</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).

**Figure 7:** Spearman correlation between daily hours and wellbeing (after)

Participants reported different forms of mental distress, as summarised in Table 7, with
19.7% reporting problems focusing while lectures are being delivered, as well as stress being reported during the pandemic period. Such results corroborate Tichavsky et al.’s (2015) findings which found that students’ motivation decreased when learning switched online and students encountered several challenges.

<table>
<thead>
<tr>
<th></th>
<th>Responses (N)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to Focus</td>
<td>72</td>
<td>19.7%</td>
</tr>
<tr>
<td>Stress</td>
<td>67</td>
<td>18.3%</td>
</tr>
<tr>
<td>Anxiety</td>
<td>53</td>
<td>14.5%</td>
</tr>
<tr>
<td>Motivation</td>
<td>53</td>
<td>14.5%</td>
</tr>
<tr>
<td>Self-confidence</td>
<td>50</td>
<td>13.7%</td>
</tr>
<tr>
<td>Social isolation</td>
<td>43</td>
<td>11.7%</td>
</tr>
<tr>
<td>Fatigue</td>
<td>27</td>
<td>7.4%</td>
</tr>
<tr>
<td>Panic attack</td>
<td>1</td>
<td>0.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>366</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Table 7: Reported challenges encountered during online lessons

Policy Recommendations

Despite the challenges encountered by participants whilst participating in virtual learning activities, overall, they were satisfied with the platforms adopted by MCAST to deliver such online lessons, as displayed in Table 8.

<table>
<thead>
<tr>
<th></th>
<th>Microsoft Teams</th>
<th>Moodle</th>
<th>Classter</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>3.97</td>
<td>3.38</td>
<td>3.51</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
</tr>
</tbody>
</table>

Table 8: Participants’ opinion on the online platforms utilised during online lessons

In fact, 53.91% of all the participants prefer a hybrid learning arrangement to be adopted for the 2021/2022 academic year, with only 22% of all the respondents preferring lectures to be held only on campus. In particular, Table 9 depicts the Chi-square analysis to determine the association between the course delivery during the previous academic year and the preferred ways of attending lectures. Results show that those students who had previous experience of online schooling are more willing to shift towards hybrid or online schooling.
<table>
<thead>
<tr>
<th>Delivery of course for this scholastic year</th>
<th>Preference for next scholastic year</th>
<th>Count</th>
<th>Online only</th>
<th>Campus only</th>
<th>Combination of both</th>
<th>Total (% within)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online only</td>
<td>Count</td>
<td>11</td>
<td>22</td>
<td>37</td>
<td>70</td>
<td>15.7% 31.4% 52.9% 100.0%</td>
</tr>
<tr>
<td>In the past year how was your course content at MCAST delivered?</td>
<td>Count</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>0.0% 0.0% 100.0% 100.0%</td>
</tr>
<tr>
<td>Mainly online</td>
<td>Count</td>
<td>11</td>
<td>6</td>
<td>19</td>
<td>36</td>
<td>30.6% 16.7% 52.8% 100.0%</td>
</tr>
<tr>
<td>Combination of both</td>
<td>Count</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>5</td>
<td>60.0% 0.0% 40.0% 100.0%</td>
</tr>
<tr>
<td>Campus only</td>
<td>Count</td>
<td>25</td>
<td>28</td>
<td>62</td>
<td>115</td>
<td>21.7% 24.3% 53.9% 100.0%</td>
</tr>
</tbody>
</table>
Did the COVID-19-Related Shift to Online Schooling Influence Students' Mental Wellbeing? A Quantitative Study on Level 4 Students at MCAST

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymptotic Significance (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>12.976a</td>
<td>6</td>
<td>.043</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>14.601</td>
<td>6</td>
<td>.024</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>1.892</td>
<td>1</td>
<td>.169</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>115</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. 6 cells (50.0%) have expected count less than 5. The minimum expected count is .87.

**Table 9:** Chi-square test correlating the relationship between past delivery of lessons and future desire of lecture types

Therefore, a blended learning approach should be suggested in the future to also cater for those students who prefer such a mode of learning. However, this requires a national strategy to be implemented as it is important to first overcome the bottlenecks that were previously experienced by participants during the first shift to online learning, as summarised in Figure 8.

![Figure 8: Participants' major struggles encountered during online learning](image)

Moreover, most participants (78.26%) were unaware of the MCAST support services which are available, and which consequently require more promotion and communication from this unit to reach those in need of such services. Currently, MCAST students are given information about the support services available during their induction week, including information about counselling services offered on campus. These services should be ongoing, especially in times of stress.
Conclusion

Many studies, including publications by Kalok et al. (2020) and Odriozola-González et al. (2020) have proven that the transition from traditional to online classes had a psychological effect on students. Since students are unable to access online courses due to limited network capacity but must repeatedly rely on their smartphones, it led students to feel excluded from lectures and possibly harmed their academic performance, causing higher levels of stress and anxiety among students (Kalok et al. 2020; Odriozola-González et al. 2020).

When obtaining an initial benchmark, this study tried to understand the mental wellbeing of participants before the shift to online schooling that was needed due to COVID-19. Results show that 80% of the participants (n = 92) did not suffer from or experience mental health issues before the pandemic. When comparing male to female participants, results show that the mean score among male participants was already high prior the shift to online schooling, which shows that male students were already suffering from distress.

These findings prove that the mental wellbeing of the surveyed participants has deteriorated following the shift to online learning, in particular with specific challenges like focus, stress, and anxiety. This study shows that significant relationships have been identified between students’ self-reported wellbeing during online lessons and their wellbeing before this shift, as well as the daily hours of online activities. Yet, there was no significant association between the impact this shift to online schooling had on students’ mental wellbeing and the gender of the participants.

Participants reported that this shift from conventional learning to online learning, which was mandatory because of COVID-19, led to different forms of mental distress, including problems focusing during lectures, stress, and decreased motivation.

Looking deeper at the findings, this study shows that younger students suffered the most due to this shift from conventional to online learning. Conversely, mature students were less affected, possibly due to being more experienced to deal with such life challenges. Furthermore, with a level of significance of a 95% level and a 5% margin of error, individuals who self-reported as being unwell in terms of mental health before the shift to online schooling were the most likely to experience anxiety, loneliness, and other mental problems during the online learning period between March and June 2020. It is important to note that the findings also show that participants’ mental wellbeing during this shift was not dependent on whether they used online learning before this mandatory shift. However, it was indeed dependent on the number of hours that they spent learning and being assessed online during this challenging period. As expected, the more time was spent, the higher the levels of stress that they reported.

Nevertheless, and notwithstanding the challenges encountered, participants showed that they were satisfied with the platforms adopted by MCAST during this online-learning period. Furthermore, despite the challenges, perhaps—and even because they have now learnt how to deal with online learning—53.91% of the participants stated that they prefer hybrid learning arrangements to be adopted for 2021/2022. Only 22% of all the respondents prefer lectures to be all held on campus. This understanding is further sustained by findings which prove that those students who had previous experiences of online schooling are more willing to shift towards a hybrid or online schooling. This in fact confirms that while one’s transition from conventional to online learning needs to be probably swifter than the one experienced during COVID-19, once one gets used to online learning, learners can appreciate the benefits of the online learning more fully. Furthermore, based on the results reported, due to the fact that the time spent has an influence on mental wellbeing, perhaps
a hybrid approach would reap the best benefits of all scenarios. A micro or macro strategy considering the major struggles encountered during this shift to online schooling and further fundings is indeed suggested by this study.

Rather than limiting online learning opportunities for full-time students, this study calls for MCAST to promote the support services even more so as to reach those who encounter issues of mental wellbeing. Most participants (78.26%) were unaware of the availability of MCAST’s support services.

Considering these results, educators and school administrators must be aware of such circumstances, encourage students to have a positive mindset, and inform them about the services available for support. It is therefore crucial for the Ministry for Education and Sport to formulate a national strategy on online learning to prepare stakeholders for any sudden future shifts, as well as to better utilise the advantages of virtual learning.

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