Independent Colleges
learn to succeed

| LEARNER NUMBER	51701847
NAME	Lucrecia Mundo Cervantes
COURSE	Bachelor of Arts (Hons) in Business Studies
DISSERTATION TOPIC	The adoption of hybrid learning in Third level education Dublin
SUPERVISOR	Klaus Walter
WORD COUNT	6,986
DUE DATE	30/11/2022

I certify that:

I consent to having my dissertation be retained in the library for the purpose of future research.   Yes ☒   No ☐

[Note that if no check boxes are selected, this dissertation will be regarded as NOT properly submitted, and may be subject to a late submission penalty]

INTELLECTUAL PROPERTY STATEMENT

By checking the box below: I/we (if submitting on behalf of a group) certify that this assignment is my/our own work and is free from plagiarism. I/we understand that the assignment may be checked for plagiarism by electronic or other means and may be transferred and stored in a database for the purposes of data-matching to help detect plagiarism. The assignment has not previously been submitted for assessment in any other module or to any other institution.

☒ Agree

Signature: _____   Lucrecia Mundo Cervantes_____

Date: _____30/11/2022_____

Notes:

Abstract

The purpose of the study was to analyze if third-level education in Dublin was ready to adopt hybrid learning based on the student's perspective. The study was supported by secondary research such as Analysis books, Reports, government documents, National bodies' documents, Journals, and previous studies. And primary research was done by interpretivism approach, inductive Research using the mixed method, quantitative through the responses of 620 surveys, and qualitative through 3 interviews.

Interesting results were found in the primary research such as Teachers required constant training not just in technology but also in pedagogical and communication. Students considered that teachers were using traditional tools to deliver class instead of taking advantage of the technology and those factors affected their engagement with their learnings. Also, students didn't consider the interaction with teachers and college staff as a factor to be engaged with their studies. And that they felt more comfortable asking questions during class rather than technological tools. From the student's perspective, F2F classes were the best option for them, followed by hybrid. It was concluded that there was still a long way to go to achieve better results and adopt Hybrid learning in Third level education.

List of Acronyms

F2F	Face-to-face
INDEX	Irish National Digital Experience
NBP	National Broadband Plan in Ireland
QQI	Quality and Qualifications Ireland

<div align="center">

List of tables

</div>

List of diagrams

Table of Contents

Chapter 1. Introduction

1.1 Background of research

Technology developed new approaches that enriched education. Electronic and digital tools helped to improve the experience of students, teachers, and schools (Flair, 2022).

Over the years, different stages of educational technology were seen, the first stage was the installation of computers in a classroom where students learned the use of the computer, programming languages as well as computer-aided study. The second stage was where computers were seen more as an access information tool, and connections between students, teachers, and institutions all over the world. The third stage was by 2000, the development of different devices will let people access easily anytime anywhere, the classroom started to become a virtual space where terms such as "bring your own technology" and access to cloud technology services led to the creation of "hybrid Learning" (Trentin, 2015).

Hybrid learning was an approach that combines the greatest elements of classroom and online education. The challenge was to develop the necessary knowledge and communication to be successful. The idea was to improve the student's learning using a F2F educational environment and technology-supported teaching. The use of web tools was crucial to present and manage the course content in hybrid environments. (Kazu, et al. 2022).

Because of the Covid-19 Pandemic, higher institutions worldwide were forced to close campus premises and make students and staff learn and deliver classes from home. Due to the risks the Pandemic and its variations brought to people, many universities decided to keep using online and hybrid learning models. Even though these models had been used in previous years the current situation made universities, teachers, and students face different challenges such as connectivity the use of appropriate equipment and a suitable environment. Nevertheless, as the

needs were changing Universities in Dublin looked for resources to offer students the best approaches to deliver classes to students from now to the future (Cullinan et al. 2021)

1.2 Rationale for the study

Covid-19 was a major disruptor in the use of technology and how society should take more advantage of it. As mentioned before, Higher-level education must change how they used to deliver better classes. The purpose of this study was based on the research questions that were:

- According to students' perspective was a suitable option for Third level education, after the disruption COVID brought?
- Was the Hybrid model education an option for future generations?

1.3 Statements of research objectives

Theme 1

- What were the challenges for students' high-level education faced in the transitions from F2F, online to hybrid classes?
- At what stage were students, staff, and College ready for the technological changes?

Theme 2

- After covid-19, what have been the improvements that third-level education has made to adopt a hybrid learning model?
- Did the challenges were overcome after the Covid?
- How technology changed, how students interact with it, their environment, behaviors, and challenges once the pandemic was over?.

Theme 3

- According to students' experience what was needed to deliver quality classes in hybrid learning?

- Do teachers have the necessary elements to be able to carry out successful teaching-learning?

Theme 4

- What were the factors that will increase or decrease students' engagement in Online classes/ hybrid classes?

1.4 Information gathering and data collection

The study was based on secondary research involving analysis of books, reports, Government documents, National bodies' documents, journals, and studies. Due to the characteristics and objectives of the study, in primary research, a mixed method was selected to carry out this study. The quantitative research conducted by survey provided variables and statistical results, and the qualitative research done through interviews offered context, words, and meanings that together allowed for a richer perspective of students in online and hybrid classes. All questions were based on the student's experience and perception. The survey was addressed to people between 18 and 60 years old that live in the Dublin area. That they were studying for a degree in Ireland during the norms and restrictions of the pandemic between 2020 and 2022 and had attended at least two types of classes; online, hybrid, and F2F.

1.5 Expected Outcomes of the study

This paperwork aimed to analyze if hybrid learning models could be adopted in Irish Universities as part of the new normality seen from the student point of view. The transition of the classes during the pandemic. The benefits, improvements, and challenges that hybrid

learning has once the pandemic finished. Also, the improvements in teaching-learning, to finally know the factors that will influence the engagement of the students.

1.6 Chapter-by-Chapter Overview

This study was divided into 5 chapters.

The first chapter corresponded to the introduction of the topic where it was found some stages of the technology, the meaning of hybrid learning, how Covid-19 was a disruptor for education in Third level education, following the study's purpose, the question research, and the outcomes were expected to reach in this study.

The second chapter was the Literature review focused on four themes related to hybrid learning in Third Level education in Dublin. Such as the educational transition during Covid-19, advances and challenges once the pandemic was over, Teaching-learning, and finally student engagement.

The third chapter explained that interpretivism was used as a research method. And supported with an inductive approach and mixed-method research with the use of surveys and interviews.

The fourth chapter explained the findings of the research as a Literature Review organized by the themes of educational transition during Covid-19, advances, and challenges once the pandemic was over, Teaching-learning, and finally student engagement.

The fifth chapter presented the conclusions of the study. It was found that even though there were improvements, the main aspects that needed to be improved were training for colleges, staff, and lecturers, as well as that a variety of methodologies and tools are required to obtain better outcomes in hybrid learning.

Chapter 2 Literature Review

This study presented the changes education had during the pandemic and the following years The development of technology, tools, contents, students, schools, and teachers' behaviors.

2.1 The transition from F2F, Online, and hybrid classes during COVID-19

By 2006, technology and the internet were crucial elements in education development. The creation of various learning models, the transformation of learning environments, and access to a wide variety of resources were helping students improve their experiences in their learning process (Olapiriyakul and Scher 2006).

Most recent studies done during the pandemic concluded that digital tools and platforms offer a great opportunity for significant pedagogical delivery.

"SWOT data analysis findings from staff confirm that digital tools and online learning platforms provide a novel way for meaningful opportunistic pedagogical delivery"

But it recognized that technological integration needed more effort, time, and training for obtaining effective online learning (O'Brien et al. 2020).

The increase in confirmed cases and deaths in Ireland caused the government to close schools in Ireland to protect people from the virus, making schools look for alternatives to continue delivering classes to students in higher education (BBC news, 2020). According to the European university association, around 90% of European higher education had to move to online classes due to the Pandemic crisis. (Gaebel, 2020)

A SWOT analysis study done in 2021 considered several weaknesses that affected students, teachers, and staff during the pandemic, but this paperwork will be taken into consideration just two. The first one was the transition to online. On one hand, according to the Irish National Forum, a survey done before Covid showed that 70% of the staff who teach never taught in a

live online environment (Irish National Forum 2020). Therefore, most of the institutions and teachers in Ireland only based their pedagogical models on face-to-face classes an approach not flexible to online education (Talbert et al., 2022).

On the other hand, the lack of time to plan played an important role in this transition, schools had to improvise and learn by trial and error (Talbert et al., 2022). In this regard, Fitzpatrick and Mcstravock's (2020) demonstrated that 5.6% of the interviewed population agreed that they had enough support to continue their studies during this transition. In contrast, Talbert et al (2022) study showed students felt lost at some point making it harder for them to adapt to the new learning environment.

The second weakness was the training for online education, which were the elements students found challenging in this process. According to Yang's study, students pointed out different factors that made difficult remote learning. The principal factors included interaction, preferring in-class learning, hard to stay focused, and virtual learning platforms (Yang 2021). However, other studies added other factors. Firstly, when facilities were closed, students couldn't have an environment where they can study and develop the essential digital skills to participate in online learning.

Secondly, inappropriate equipment affected learning outcomes (Cullinan et al. 2021). By 2020 a QQI evaluation showed that just 39.6% of the participants had a laptop used just for one person while a 32.9% used a different device or the device was used by another as well (Quality and Qualifications Ireland, 2020).

Finally, student engagement and the poor quality of the connectivity depend on location (Cullinan et al. 2021). This contradicts the results shown Fitzpatrick and Mcstravock's (2020) study showed that only 12.8% of the surveyed population considered they had issues with

broadband speed or access to electronic devices that didn't let them have sufficient online learning.

In general, European Higher Education Area had to adapt to too many changes and suffered from planning uncertainty, but more important was that the pandemic forced in the positive way digital learning and teaching (Gaebel and Stoeber, 2022).

"History shows us that pandemics don't change things. They just accelerate shifts that were already underway. As we grapple with a rapid transition to digital, it's clear that COVID-19 has had a huge impact on our daily lives and our livelihoods," (Zmuda, 2022)

2.2 Advances and Challenges to the adoption of Hybrid learning models after the pandemic

After all the challenges Ireland faced during Covid. On one hand, various institutions, governments, and universities in Ireland worked on the improvement of education in higher-level education based on technological approaches. As National Broadband Plan in Ireland by 2021 had as a goal to deliver high-quality and high-speed broadband in every place in Ireland, over 230 broadband connection points were supporting public access. In addition to this, companies such as Eir and Virgin Media announced plans to expand fiber networks to improve the speed of their products (Department of the Environment, Climate, and Communications 2021). Another Institution was the *National Forum for the Enhancement of Teaching and Learning in Higher Education* where the priority was to invest in Digital transformation to support the teaching and learning online, blended, and face-to-face modes of learning (Lowry 2022) some of their initiatives were related to support students, teachers and staff in topics related digital fields such as the improvement in the evolution of learning environment, prioritize professional development for staff for digital capabilities, learning technology and

design as an essential skill and create strategies that let students engage easily in an increasingly digital workplace and society (National Forum for the Enhancement of Teaching and Learning in Higher Education 2021). Also, the National Digital Strategy aimed that the country became a digital leader based on adaptability and development through promoting digital skills at all levels. An initiative that could influence the adoption of hybrid learning for the new normality of the country (Department of Further and Higher education, research, innovation, and science, 2022)

On the other hand, the advantage considered in this model was that hybrid learning could be done anywhere, reducing the time spent in the classroom, and giving students the same results as traditional learning but with more time efficiency (Crawford et al 2014). Another survey conducted by the RSCI Pathology department supported the previous assumption that 44% of medical students interviewed considered teaching "in person" not an efficient use of their time (RCSI Pathology Department, 2022).

In addition to this, the possibility of having documents, recording classes, and resources available 24 hrs and the opportunity to monitor their advances and learnings through blackboard tools made students satisfied with the hybrid model (Lin, O., 2008). A recent study supported the previous idea that students considered this point (flexibility) as a positive aspect of learning (Yang 2021).

Secondly, several studies focused on students' behaviors during classes, studies, and the development of their skills. Some studies showed that students felt more comfortable asking questions online, increasing their class participation. *"The online space offered an opportunity for inclusion of diverse student voices."* (Buckley et al. 2021). A survey showed that students improved their ability to write opinions or questions easily through devices (Quality and

Qualifications Ireland, 2020).   Moreover, Yang's results showed that the non-verbal participation option such as chat, polls, and quizzes made it easier for students to contribute to the class (Yang 2021).

The final factor mentioned in studies was the student's development of new skills. Before Covid, a study by The Center for Instructional Technology at Trevecca Nazarene University concluded that with a well-designed hybrid course, students maximized their skills such as independent learning, autonomy, self-direction, time management skills, critical, problem-solving skills by not depending 100% on teacher's guidance or instructions (Crawford et al 2014). Some authors considered that students with more experience and empowerment were those who will take control of their learning (The StudentSurvey.ie National Report Editorial Group, 2021). However, it was also revealed that students who cannot talk with classmates and lack direct interaction with lecturers will make them feel isolated in online classes.

"They *enjoyed interactive virtual classes... they studied better independently, and this gave them better assessment results"*.

"*This lack of live classes was a major contributor to them not being able to concentrate and feeling isolated"* (Yang 2021).

2.3 Teaching-learning in hybrid learning

Before the pandemic, digital tools became a priority in the development plan of Higher-level education in some countries. But some studies revealed that users didn't know about available resources, or how to use them, or the universities lacked digital learning materials. But it pointed out that technology was able to improve the quality of education, develop efficiency in the learning process, and transform from passive to active learning, through visualization, project-based learning, distance learning, and Flipped room (Kryukov and Gorin, 2017).

During the pandemic, the National Forum for the Enhancement of Teaching and Learning in Higher Education assured that Ireland was prepared with the experience and knowledge to face the requirements

"The sector was in a far more advanced state with respect to assessment and technology-enhanced learning than it would have been had the crisis taken place some years previously" ... Community and collaborative approaches that had infused teaching and learning enhancement in recent years were found to be especially valuable". (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2020).

According to QQI in Ireland, Covid-19 did not only bring technological improvements, but also the improvement of digital skills for teachers, students, and staff. It also opened a chance to reinvent lessons by combining traditional and new practices as well as test new approaches using digital and online learning technologies that supported both learning and teaching practices and activities. The study concluded that hybrid learning required that students be more self-directed and take more responsibility for their learning (Quality and Qualifications Ireland, 2020). As well as an improvement in their understanding through more own analysis, research, cohort collaboration, and independent work (Foley, 2020). Limone added that hybrid education could bring immediate and professional functional class content that must be based on the real demands of the world of work (Limone, 2021). To fulfill those requirements it was important to focus on three elements that were important for educational content, teaching and learning, and assessments.

On one hand, it was analyzed that different methodologies could be applied in different disciplines in the teaching-learning approach to fulfill real-world demands such as YouTube, online quizzes, and so on. For example, Trinity College proposed several methodologies such

as Project-based learning where students could employ and acquire knowledge through developing projects or products. The advantage of this methodology was that students could work based on real projects, gaining improvement in their critical thinking and team working skills. In Problem-based learning, students must resolve a specific problem for some time. The purpose was to reinforce the topics that were covered in class (McKiernan, 2022).

Game-based, according to some authors is considered a methodology that helps to have an interactive space for discussion during class and an effective learning environment. This study evaluated the platform Kahoot where students surveyed considered that it helped them to be more concentrated as well as improve their engagement during class (Holbrey, 2020). The flipped room consists of giving students multimedia resources, such as links, and online articles before the class. The purpose was that during class students could discuss and work together based on the material providing classroom time for more differentiated education (Tawfik and Lilly, 2015).

2.4 Student engagement

Over the years the concept of student engagement changed considerably. While in the past student engagement was determined by the attendance of students in class, their participation in the class, and their completion of assignments (O'Brien and Chawke, 2022). Currently, it was considered student engagement had four dimensions. Behavioral, which comprised the student's participation in the university and social activities. Emotional, were the emotional reactions in the classroom and the university (belonging). Cognitive was when students invested in their learning, and it included motivation and self-regulation (Nepal and Rogerson, 2020). And finally, in agentic students look to express to teachers their needs in the learning process (Chiu, 2021)

With the development of technology and later with the transition to online classes during Covid, student engagement focused on other factors and manifestations, firstly because the interaction between lecture and student was reduced, and secondly, because teaching and learning were facilitated through technology. (Farrell and Brunton, 2020).

The first factor was the teachers' roles in student engagement in hybrid learning classes. A study mentioned that teachers acted as a guide that will support students more intensively. It was considered that when students feel an engagement by teachers the results have a positive effect. (Stone and O'Shea, 2019).

As a second factor, studies found the importance of social interaction. How teachers, students, and staff interact, communicate and engage each other in the classroom (Moore and Gilmartin, 2010). All these relationships were not just a motivator for students' engagement but also helped to develop their learning skills as well as educational goals (Torsney and Symonds, 2019). Studies done during Covid showed that for lecturers the challenge was to create an interactive environment in online classes between students and teachers. While a study done by the Union of studies of Ireland showed that 35.84% of their student respondents didn't have a chance to engage with other classmates. Another study showed that results were that 56% of staff respondents felt disconnected from students.

"… *I don't feel I can push the students morally when I'm not there to safeguard the class*". (Buckley et al. 2021)

And 65% of student respondents agreed that they felt isolated in online classes (Buckley et al. 2021). And was reinforced by another study, mentioning that with the increasing use of technology, students work more isolated and there was a disconnection with the learning outcomes (Bergdahl and Nouri, 2020). Therefore, it was important to create an online learning

community and build interpersonal relationships that lead students to feel comfortable sharing experiences and developing trust (Yang,2021).

The third factor was the use of technology during classes. Some studies done in economics courses concluded that digital support had important pedagogical advantages. Also, it influenced increased student engagement and impacted positively the course's success. Some examples were the classroom response system, multimedia, bring your device, social media, and YouTube (Nepal and Rogerson, 2020).

Finally, to enhance student engagement in online classes, a well-designed content class was necessary to considerably impact the student learning experience (Farrell and Brunton, 2020). According to some authors, technology was considered a pedagogical advantage for students because of the use of computer-based instructions. As an example of this, a well-designed course could promote real-world simulations and experiences, clear and focus learning, and efficient use of time just to mention some (Chiu, 2021) Other factors mentioned by some authors were lack of interest from students, availability of devices, and technological knowledge (Bray 2021).

Chapter 3 Methodology

3.1 Research method/ philosophy

The philosophy applied to this research was Interpretivism because of the characteristics of the project. Research philosophy is a set of beliefs and assumptions about the development of knowledge. Interpretivism is based on the belief that people create values based on their experiences. People are different because of their backgrounds, and circumstances. Every individual creates their meanings and realities according to their experiences. The purpose of this philosophy was to create understandings and interpretations that can differ between different contexts (Saunders, et al 1997).

Therefore, this research aimed to find out if the hybrid learning model could be adapted for the future educational field based on people who already had such experiences. Based on perceptions, and beliefs of students who studied the type of model or similar (online) in Dublin during the Pandemic.

The research approach adopted in this study was inductive with mixed-method research. Inductive research is based on observation. While in deductive research, the conclusions are supported and guaranteed by logical premises. In the inductive, conclusions are supported by observations made (Saunders, et al 1997). An inductive approach was used since this project was based on particular premises, perceptions, observations, and experiences that helped create a general conclusion.

3.2. Justification for the adoption of the method.

The method implemented in this study was a mixed method that combined qualitative and quantitative research. This method merged the strengths of the two, giving multiple perspectives to better understand the study (Hesse-Biber and Leavy, 2010). This method was

chosen because of the characteristics of the study, where a complete perspective was needed to get better results. While quantitative research provided statistical results and variables, qualitative research offered context, words, and meanings.

The quantitative research conducted a survey and the qualitative was done through interviews. The questions asked were divided between the four themes of the study theme 1 transition during COVID-19, theme 2 advances and challenges of Hybrid learning theme 3 teachings, learning, and theme 4 Student engagement. All questions were related to the student's experience and perception to evaluate if hybrid learning can be adopted in Third level education in Ireland based on some aspects of education from the student's point of view and experience. The survey had 26 mandatory multiple-choice or checkbox questions, which were developed based on what was investigated in the Literature review. In the interviews around 30 questions were asked, and the student was free to say their experiences and points of view.

3.3 An outline of sampling technique and sample size.

For the primary research, 62 online surveys were completed from the 5th of October until the 24th of October. The survey was addressed to people that live in the Dublin area and was between 18 and 60 years old. Additionally, they were studying for a degree in Ireland during the norms and restrictions of the pandemic between 2020 and 2022 and had attended at least two types of classes; online, hybrid, and F2F. The strategy was to share the link with a text asking to answer the surveys if they were entered in the previous description through different digital media such as LinkedIn, Facebook groups of Mexicans, Brazilians, and Spanish, and in a WhatsApp group of Independent College students. In addition, an email was sent to the *Head of Student Services* at Independent College to request sharing with the student at the College.

3.4 if Explanation of what analysis method employed

As in the surveys, the questions were divided according to the 4 themes of this study. The interviews were done with three students. Before the interview, the interviewees were asked if they wanted to participate and the topic to be discussed and consent was sent to their emails.

To keep their confidentiality each student was given a code based on the order in which they were made.

Student	College	Degree	Current semester
Student 1	Independent College	BA Business	6th Semester
Student 2	CCT	Science in computing	4th Semester
Student 3	Independent College	BA Business	6th Semester

These students were invited to participate because they had the characteristics requested by the study.

Student 1 began the degree in 2020, when the pandemic started, student 1 had F2F classes and after a few weeks, classes went online. It was until the second half of 2021 that the hybrid classes began and continue with this model. This interview took place in a coffee shop. 39 questions were asked. It was perceived that student 1 preferred to learn in their own time alone but at the same time, the interaction and commitment with teachers, staff, and students were important. Also, that hybrid learning could be an option. Nevertheless, many efforts were still required such as technology, content, pedagogy, and training. The following table shows a greater perspective of the keywords.

Student 1	
Themes	**Keywords in interview**
The Transition from F2F to online and hybrid learning classes during Covid 19	Surprise, unexpected event. Sharing accommodation was not easy in online classes. Learning technology as well as Business subjects. It was beneficial to learn and study. Everyone had to adapt to the situation. The camera on is to break privacy. It was beneficial to have online exams, Translate into my own words. Good connectivity I was close to the city centre. No support from the school. Lack of empathy, and engagement, unexpert people to talk to students. Think that I could die.
Benefits and Challenges in the current time to adopt Hybrid learning	I spend one hour and a half going and coming from school. Saving time cooking and studying. Deal with my time. I prepare for the next week. I improve my technological skills. The technology enhancement to do something else. Not an improvement in its attendance system. More learning. Revise classes several times. Access to more information. Communication with classmates. I'm not afraid to ask. Students need to be linked with the teacher. Teachers don't contact students. Teachers don't know how to implement their knowledge (pedagogical)
Teaching, Learning, and Assessment	Improvement in how to impart classes. Teachers need to be engaged. Pedagogical skills. A lack of use of tools. Teachers just read slides. Just a couple of teachers are ready to adopt hybrid. They have a lot of knowledge, but they don't know how to impart the class. College improved little things, they need more whiteboards and microphones. Teachers and schools are learning at the same time as students. More practice in technology before delivering classes. How to implement things in the real world. PowerPoint as a guide. Students need more practical examples. How to translate from theory to practice
Student Engagement in hybrid learning	Not Isolation. More time to study. A lot of information, I'm kind of lost. Lack of strategies to place the assignments. The lack of engagement or response from the school. Make me angry. School is not capable to help. Stress, plus anger because of school. More involvement from the school. Not enough improvement in tools and content. School is focused more on reputation.

Student 2 started the degree when the pandemic was in its 2nd year in 2021, the classes of the student were online, and in the second year (2022), classes were F2F. This interview was done via zoom and 32 questions were asked, and the results of this interview were as follows on the thematic table. The perspective of this student was based on the effort of the students rather

than the external environment such as teachers, school, staff, or classmates. And that the adoption of hybrid learning can be a beneficial experience for the working field.

Student 2	
Themes	**Keywords in interview**
The Transition from F2F to online and hybrid learning classes during Covid 19	A little bit difficult, we didn't have all the material, and couldn't get the correct information about the school, For the CA they expect to get the physical material not just the PDF. Connectivity was interrupted, many students took classes at the same time in my house, and I didn't have a proper place to study. No private room. Interruption in the environment. The school was good enough to get online classes. The school was prepared. The student wasn't prepared. Teachers had dynamic classes. Mentally and academical support, understanding, and reasonable. Hard to focus I had to review the classes several times. It will be better in class. Students were shy or inexperienced to get the class point.
Benefits and Challenges in the current time to adopt Hybrid learning	I prefer f2f, I'm not distracted, and I'm more focused. Online prepares you for the future. Online get time for yourself, and for work. I have more time to eat and take care of my house. I didn't focus 100%, it was waste of time, there is a lot of distractions, and I didn't pay attention. The improvements depend on each person. I had time to improve my coding programming. I'm lazy, I avoided traveling to school. More comfortable asking F2F, but I was distracted and didn't participate. If the teacher sees your face, you must participate.
Teaching, Learning, and Assessment	The teacher is a facilitator. The teacher doesn't make the student. The student must give an effort. Teachers are prepared for the new technology. Teachers give tools and superficial skills. Students must improve day by day. Moodle page, practical classes, Java programming. Posted exercises, exercises resolved as a group. I don't feel isolated.
Student Engagement in hybrid learning	A lot of distractions. The school improved the technology. Interaction with teachers is important, I ask teachers about doubts. The engagement of staff and teachers is not relevant to student engagement. Student interaction is important. Students need interaction just the necessary. The interaction doesn't affect the engagement. It helps to improve individuals as agroup. I hybrid model is not the best option, it depends on the person, kind of project or school.

Student 3 started in the 5th week of the 1st semester in 2020 when the classes were already online. From the second year, the student had hybrid classes until 2022. This interview was done via zoom, and 32 questions were asked the results of this interview were as follows on the thematic table. The perspective of student 3 was a balance between students 1 and 2, where the effort had more weight in students, however, the interaction between teachers, staff, and

students plays a minor role. This student considered that hybrid learning was a good option for adults. But there were many gaps to fill. A wider perspective is shown in the following table.

Student 3	
Themes	Keywords in interview
The Transition from F2F to online and hybrid learning classes during Covid 19	Very difficult, I didn't know the college has a website, and the school didn't respond I couldn't engage, but I had time to study. Time to catch up on classes. No guide to use Moodle. Was difficult for college as well. Everybody was lost. I felt disappointed. Messed up with classes. I didn't understand. No problems with connectivity. The lecturers had bad connectivity. It was new to everybody. I didn't use the computer before college. I'm not very good at PowerPoint. I didn't have experience in computing. It was challenging. Took more time. It was hard. I don't use technology apart from school. I studied in the Living room I didn't have a proper chair. I had back pain. It was not proper. The school didn't have experience in technology. Struggling to manage classes. Teachers don't have experience. Quizzes, debates and break rooms are more interactive for people. School should be prepared because is a college. Many colleges offer online classes. School should have thought ahead. I left alone. They should have someone with experience to help students. People had issues with their attendance. Try to engage with students. Say hello and people don't reply. No interaction. Some people don't engage, they are sleeping. Self-motivated. Focus on this semester, Get good scores. I have something good in mind.

Benefits and Challenges in the current time to adopt Hybrid learning	Hybrid model, like to see people, online you manage your time. When you can't see people is more difficult. Online people don't reply. You can see people going through the same situation. If I ask it's maybe just me. Others maybe need to sit on the bed. I have more rest, I do assignments, do things for the house, and cook. I feel free to check information during an online class. In F2F looks like we are not paying attention. How to use the time wisely. Making things easier for me. Skills improve 100%. Learn zoom meetings, it is not difficult. I have developed my technological and managerial skills in the office. Some classes are boring, online you are tempted to check something else. In college you can't escape, you are forced to concentrate. Self-motivation. I prefer to ask or participate in person. I like to see the person. To see a reaction. You can see the whole body, and how the person feels. I don't like to interrupt. Prefer to ask teachers F2F. Speakers are loud that interrupt. So I prefer in the chat box.
Teaching, Learning, in hybrid learning	Some classes need to improve. Bring videos and have games and quizzes. Improve how they introduce the context, graphics, and maps. The videos depend on the class. Videos related to the subject, different businesses, and different approaches. Lecturers can change the content. Something different in every class. I remember the lecture she played music. Try to engage people in different ways. You can listen to a podcast, but you don't have time to read. Teachers are not ready for hybrid learning. They are struggling to teach in the online environment. They could do some training. Motivational speakers have different ideas on how to engage people. One teacher speaks slowly, so you have time to think. I have some time to process the information. College could provide some training for them. We should have something practical. Agreements with companies. Have an idea of how works in real life. Hear their daily tasks that perform. We just have theoretical things. In real life it's not like that. Common tools, video, PP, PDF written content. Few have graphics and case studies. They are using it a lot now. The school is saving money, they could take this money and invest it in something for students. A lab, kind of factory. An idea of how to line production works. More practical they can bring to reality

Student Engagement in hybrid learning	I don't feel isolated, it depends on the other end. I'm concerned about assignments I don't ask too many questions. Depending on the lecture, they try to engage their students, so they won't feel isolated. I like to be alone. People around disturb me. It depended on the person. Except I sometimes think I am the only one who has a problem. Concentration affects my engagement. I should focus I like to start one thing and finish. I don't like two or three assignments at the same time.
	The school has the learn support. The improvement is slow they could do more. The interaction with the teacher is not important. I don't have this need to ask somebody, to be mentoring. I don't know the person that everyday interacts with students or lecturers. I don't need the lecturer to be there every day just in the classroom. Hybrid learning is the best option for adults not good for teenagers, they need to learn how to socialize. It depends on the adults some people are not good at administrating their time. They can't force themselves to concentrate in class. You can work different hours, just watch the recorded class. Teachers need to improve their pedagogical skills. New skills for this generation. Investment in school, new tools. A platform could be more engaging with students and lecturers.
	Teachers need communication skills. They need to learn how to reach students and organize their classes. To know their audience. More investment in the field.

3.5 Ethical Section

Ethical research was a fundamental factor for this study, ensuring that the methods and procedures used were governed by dignity and integrity making sure that the people who participated were voluntary, informed, anonymous, and confidential.

3.5.1 Survey

The first part was informed consent where students could find the purpose of the study and the themes to be discussed and was advised that their participation was voluntary and had the option to withdraw it at any time, as well as confidential, any personal information, IP or email

address was collected, therefore it was completely anonymous. And that the results were used for scholarly purposes and may be shared with academic staff in ICD. And finally, the data collected were stored by the author of this study and may be shared with and used just for scholarly purposes. At the end of this section, they were asked to agree to continue the survey or disagree to decline participation.

3.5.2 Interview

Informed consent was sent to the participants by email, which was an invitation to participate in the research, the reasons why they were selected, and the aims and purposes of the study. The consent form consisted of as in the survey participants have the option to refuse to answer any question or withdraw from the interview at any time. The agreement was that the interview was audio-recorded. And that in the report and results there was confidentiality and anonymity. Also, extracts of the interview could be taken as a quotation. Finally, they were free to contact people involved in the research, and if they considered a risk of harm, they could report it to the researcher.

Chapter 4. Results/ Findings

4.1 The transition from F2F, Online, and hybrid classes during COVID-19

During the pandemic, several challenges high-level education faced during the transition from F2F, to online and hybrid classes. According to the students surveyed, the most difficult challenge they faced was as the graph showed.
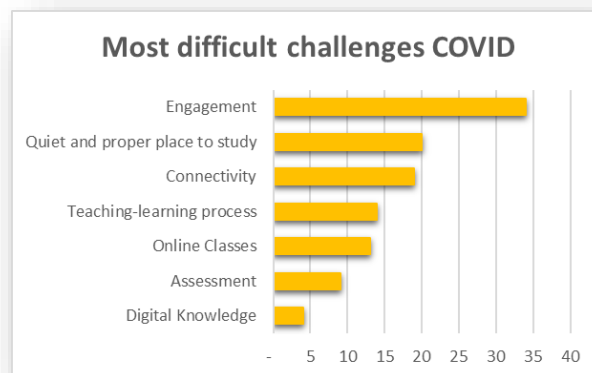

Diagram 1. Challenges for students during Covid-19.

About these factors, deeper details were shown in this study. On one hand, in the engagement factor, interviewed students considered that the lack of response and engagement of other students made it difficult when lecturers put them to work on activities together and the outcomes were not as it was expected.

"Trying to engage with students. Sometimes teachers put on you breakdown room and you say hi hello and people don't reply, and then we went back to the main uh room and I spoke to the lecturer" student 3

On the other hand, in the factor "quiet and proper place to study", it was seen that 56% of the participants took classes in common areas such as share rooms, living rooms, kitchens, or dining rooms. As a result, students found it difficult to pay attention to classes because they

were distracted by their environment. Additionally, the lack of tools such as desks or chairs made it worse.

"I was living in an accommodation with another three people in the same room, so it was not easy the first week that we went online". Student 1

"The difficult thing was that we shared the house and too many students were taking the same hours, on the same days…. It was a disadvantage for too many people who are living in a shared house or sharing the room "Student 2

"I had to study in the living room. I had back pain. I didn't have a proper chair" Student 3

The last factor was connectivity, where it was found that 63% of the participants had at least one or two days a week of disruption in their Internet connection, thus classes were interrupted until the connection was stable again.

Even though the technological factor was the least mentioned. When students were asked about their level of technical knowledge when the pandemic started, over 50% had basic or intermediate knowledge as seen in the graphic. And for some students, their knowledge of technology was an important issue when adopting online classes.

"I didn't know much about … online things and new technologies, so I was learning the subjects from college, the school learnings, and at the same time learning about the new technology" student 1
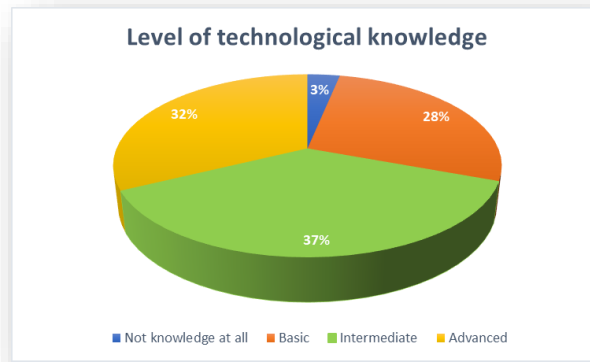
Diagram 2. Technological knowledge on students when the Pandemic started.

Students recognized that these changes during the pandemic were a surprise for everyone. However, not only students had a basic knowledge of technology, it was shown that participants considered teachers, college, and staff didn't have enough experience in an online environment and that they didn't have didactic elements to teach. Also, some students expressed that schools should be prepared for the simple fact of being a high-level education. And only one student mentioned that school was ready before the pandemic and that they already carried out some practices that continued during the pandemic, such as recording classes.

"There are already many colleges that offer online classes so I think perhaps they should have thought ahead if one day they decided to offer an online class" Student 3

Finally, when students were asked if they felt supported by their school, the two people interviewed believed that the school needed staff more experienced to help students. And they felt alone during the transition and expected better school engagement. On the contrary, one student pointed out that the school supported them mentally and academically during this process.

From the analysis of the findings, Primary research, and secondary research considered that the challenges in Third-level education faced were two. The first one was technology. On one side, the lack of experience in technology among students, staff, schools, and lecturers made it difficult during the transition. On the other side, the lack of proper technological tools such as connectivity, equipment, and devices, decreased the quality of the experience in the adoption of these learning models. Finally, the second factor was the environment, as in the secondary research, both pointed out that students didn't have a proper place to study or participate adequately in online learning and the students' conditions were precarious for the successful adoption of the model.

The results showed in this section gave to the main research where students, staff, colleagues, and teachers were standing in technology and environment aspects when the pandemic started. It was seen that there was a long way to go if Dublin wanted to adopt this type of learning for future generations, and it demonstrated the importance of updating and practicing technology as an educational tool.

4.2 Advances and Challenges to the adoption of Hybrid learning models after COVID-19

Several changes were seen after Covid-19. Connectivity had some improvements the following two years after the pandemic. While in 2020, 62% of students had a disruption in their connectivity at least once per week. It was indicated that in 2021 decreased to 55%. And finally, in 2022, just 50% of participants had issues with their connectivity, decreasing 12% in comparison with the first year of the pandemic. This point could be associated with two factors. One is how far students leave as further to the city center the connectivity was worse.

"When we started to go online, I was in an accommodation where we have a good signal because it's close to the city center, but I will say that now I have more problems because I live a little further"
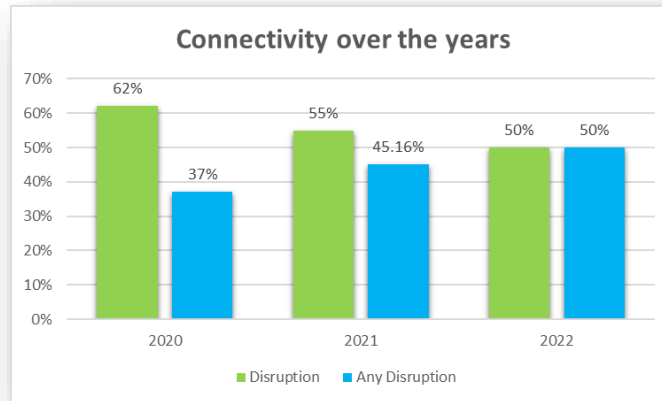
Diagram. 3 Connectivity disruption over the years 2020-2022.

And the second was because of the increase in broadband service. The following graph shows how students changed their internet connection over the two years after the pandemic. An increase of 22% from the first year to the second.
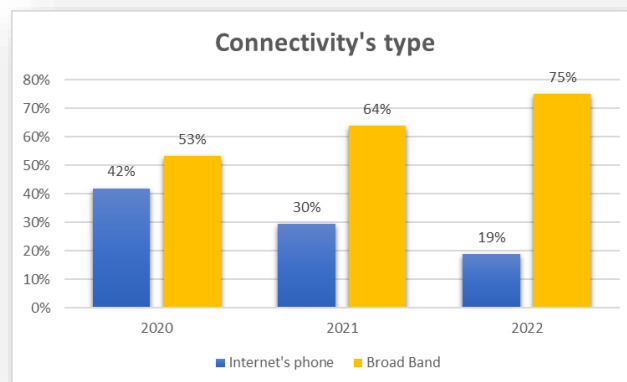

Diagram 4. Type of connectivity students used during 2020-2022.

On the other hand, the behavior of students and their participation during classes had changed. Firstly, participants considered it a great advantage to have available classes and pedagogical material 24/7 because they could repeat the information until it was clear to them. Also, they

had the opportunity to clarify doubts in real time, which means, when they did not understand a topic, they could search for information on the internet.

"I learned better in that way (hybrid learning). I said if it weren't for this model, I probably wouldn't achieve the third level…. I can review the classes…. and I have access to more information in case I have doubts…. It's working for me because I can repeat over and over until getting clearer about whatever I want, or what I was looking for". Student 1

Secondly, when students were asked where they felt more comfortable participating and asking questions, showed that for the participants F2F was the best option for them to communicate during the classes because they were able to see the teacher's reactions. Furthermore, in the interview was mentioned that participating in F2F was better because in class students were pushed to pay more attention and share opinions with the class.

"Face to face because …. Sometimes I was distracted in online classes so I didn't take all the records or all the participation so I couldn't be a good student for that. In class, the teacher is watching your face and saying OK you must participate and that's different" Student 3.
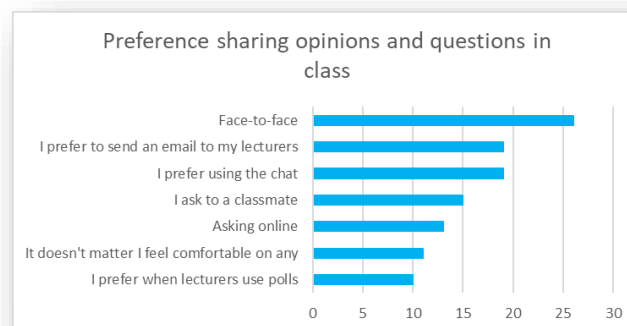

Diagram 5. Preference in sharing opinions and questions during class.

Finally, as education learning was changing during the pandemic, the development of skills or the acquisition of new ones was required so as not to be left behind. While in the past students

had to be depending on the lecturer's instructions or guides. The following table confirmed that Covid-19 brought skills where students should take major responsibility for their learning, gaining independence, self-direction, and problem-solving skills
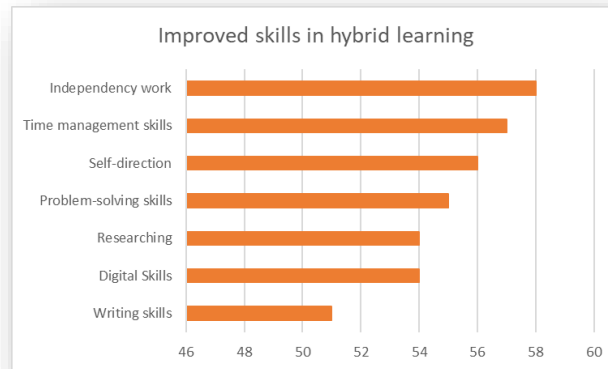

Diagram 6. Students' improved skills in hybrid learning

The improvements in adopting hybrid learning education were very noticeable. However, improvements brought challenges as well, students considered that when they were in online classes they were distracted by the external environment, while they were in "listening classes" they could multitask, using the devices to check issues related to the class or something else, as well as they, were tempted to do other activities related to their daily life.

"When is online you feel more tempted to check something else. But when you are in class you force yourself to concentrate, you can't escape." Student 3

A second challenge mentioned was that teachers were still not ready for the new technological changes, and they needed to increase their efforts in the online learning environment but in the next theme, a more detailed explanation was presented.

"Lecturers need to practice their technical skills besides their work". Student 1

"I see lectures are struggling a little bit teaching in the online environment. They could do some training". Student 3

In the development of initiatives in technological approaches where according to section 2.2 of this study, was mentioned that the government and some private companies had as a goal to improve the broadband connection in Ireland to enhance the experience in the classes. The results of this study pointed out that the following years after the Pandemic there was an improvement but still an important number of students had difficulties with their connection.

Also, in the literature review was mentioned that students were comfortable asking questions online, helping students to increase their participation. In contrast, this research indicated that students preferred asking questions face-to-face because they could see the reaction of the lecturer. But probably the main reason was that when students were F2F they felt more pressure to pay attention because the lecturer looked at them and then they had to participate.

This study research reinforced Crawford et al (2014) study that showed hybrid courses maximized students' skills because students felt more responsibility for their outcomes than the lecturer.

Finally, Secondary research considered that by 2022 teachers and staff would have an evolution in the online environment, improving digital tools and skills. Nevertheless, this research revealed that teachers and staff were not ready for the adoption of technological models.

These results meant important advances in the educational sector in third-level education, such as technology, and a significant improvement in different skills for students. However, there was still a long way to obtain better results in the adoption of hybrid learning education, but it was a good start for Third level education.

4.3 Teaching and learning in hybrid learning

Hybrid learning education let lecturers, staff, and schools take more advantage of the technological tools in combination with the traditional tools to enrich the teaching-learning outcomes. However, when students were asked about typical tools, lecturers used after the

pandemic, it was notorious that the most common tools used were videos, case studies, and the reading of PowerPoint slides, and that tools such as game learning, multimedia resources, quizzes, and polls were leaving aside significantly.
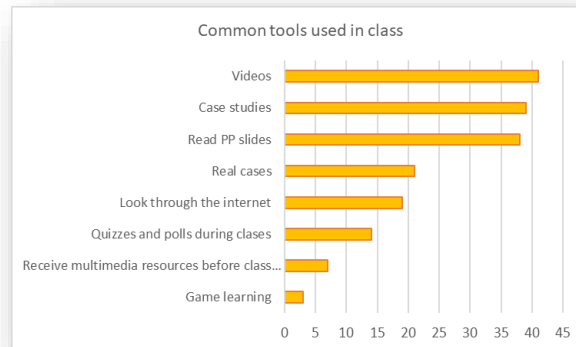

Diagram 7. Common tools used in class.

It was obvious that their practices were similar just to before Covid-19. Moreover, they were not adopting new tools to deliver classes. To reinforce this idea, qualitative and quantitative research pointed out that the main aspects teachers needed to improve were the variety of methodologies and tools used in class.

"Lecturers should try to engage people in different ways. We get engaged by conversation, videos, graphs, or a podcast... Sometimes you don't have time to read a book but if you cycle you can hear a little bit". Student 3

Other elements students mentioned were technological, communication, and pedagogical skills. These factors could be related to why teachers did not implement new dynamics and methodologies in class.
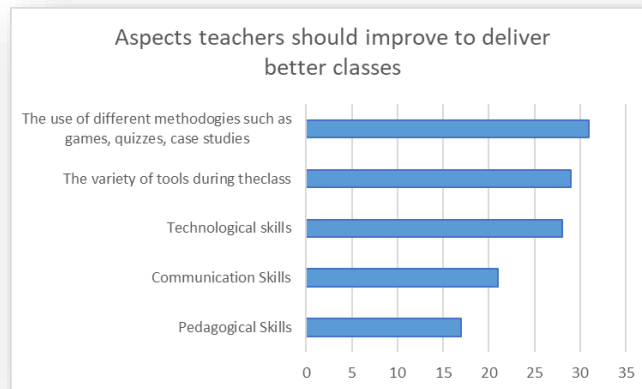
Diagram 8. Aspects teachers should improve to deliver better classes

Another element to consider in the teaching-learning was the content of the class. The interviewed considered lecturers could impart classes with practical examples that could be applied to the real world. Indeed, student 3 suggested that colleges should invest more money in practical studies such as a type of labs or factories where students could see the production line or agreements with companies where students could go, and they had an idea of how to work in real life. In contrast, 36% of students surveyed revealed that the content was good enough for the real work field while 29% considered that the course was not updated. On the other hand, 29% of people indicated that the course was related to modern conditions and just 6% recognized the content was not related.
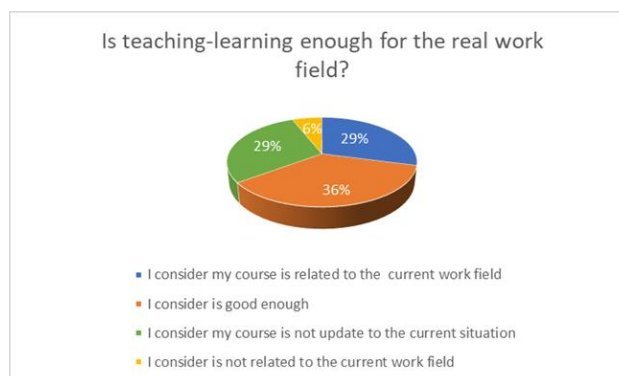

Diagram 9. Is teaching learning enough for the real work field

In this theme, it was notorious that between secondary research and primary research there were differences. On one hand, while in the Literature review mentioned hybrid learning gave a reinvention on the classes using online technologies and more professional functional classes based on real demands. According to students' results, teachers still used traditional tools to impart class and sometimes adopted other tools such as quizzes and polls. But still, it was required teachers were open to applying more methodologies and tools, to get better results and more active learning, it was suggested that they could apply more practical learning to help students be ready to work in the real world. Additionally in the primary research was a variance because in the qualitative research participants mentioned that it was required to be more practical for the real world and participants in the survey concluded that the class was good enough to apply it in the reality.

Finally, this study also revealed that teachers required constant training not just from the technology point of view but also in the communication and pedagogical skills for these new models.

In section 4.2 was mentioned that technology was developed considerably in the last two years. However, the results presented in this topic showed that technology could be available for third-level education but if schools and teachers were not ready to adopt hybrid learning outcomes could be diminished. Therefore, the government, schools, and staff needed even more effort but now in training in different aspects of the educational field such as the use of technologies, communication, and pedagogical skills. In conclusion, lecturers didn't have enough elements to carry out successful teaching-learning

4.4 Student engagement

Students' engagement was a crucial factor to be able to the success of the adoption of hybrid learning in third-level education. Analyze how they felt during hybrid classes and how their interaction with their environment was vital for this research.

Due to the characteristics of online classes, several factors could be considerably affecting the student's engagement in their education. The first one was the interaction with lecturers, students, and staff. Contrary to the author, Stone, and O'Shea, (2019), this research showed that students were not seen as important to engage in classes. In the interaction with lecturers, a large percentage of people, 48.3%, preferred to have it just during class while 29% liked to contact them at any time, and another 22.6% just the necessary. In interviews, different responses were given to this topic. Student 3 explained being not important the interaction and considered it was not a need to be with them closely.

"It's not important and it depends on the lecture, but I don't have this need to ask somebody to be a tutor like to be mentoring me all the time" Student 3

Unlikely for student 1 it was significant for his studies that teachers were there for him when he was struggling.

"There are like 4 or 5 lectures that offer me their help besides classes and that has a lot of meaning for me because it's like: "OK if you cannot do it by yourself I can explain it to you again or I can help you with something" that means a lot for me".

And student 2 mentioned that it was important for the interaction because they didn't have another person to solve issues immediately. Also, because teachers acted like facilitators they can facilitate students' progress.

"I don't have another person to solve my problems in real-time. So, if I have a problem, I have to ask the teacher at that moment"
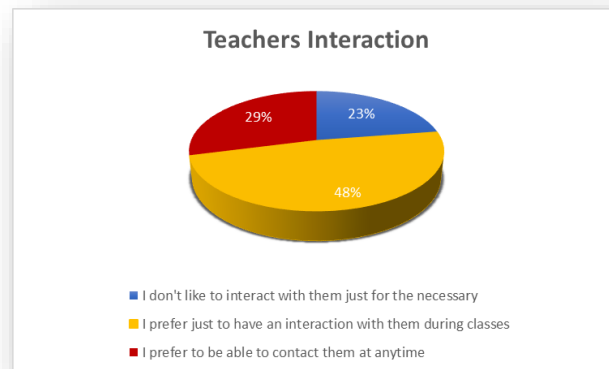

Diagram 10. The interaction between students and Learners.

Similarly, the interaction with the school staff where students 42.6% of students liked to receive constant information and updates from the university. However, 31.1% just for the necessary, and 26.2% preferred received information from the school just sometimes.

On the opposite side, students preferred interaction with their classmates, as follows 49.2% liked to interact with classmates to ask for doubts, 26.2% just in class, another 14.8% only with the team members, and just 9.8% didn't like to interact with them.

The second factor was isolation during online classes where 42% of the respondents didn't feel isolated, followed by 35% who felt isolated sometimes. In contrast, 15% rarely felt it and just 8% felt it all the time. Supporting these results, in the qualitative research students, did not feel isolated and much less it could affect their engagement. It was mentioned that would depend more on the person. Another student pointed out that also could depend on the lecturers' class if they knew how to engage people, they didn't feel Isolated.

"I don't get stressed if I'm insolated….I enjoy being around people but also, I enjoy my space, so I don't mind being isolated" student 1

"I speak to somebody even on WhatsApp and I find out they have the same one that's fine we all have the same problem no I don't feel isolated" Student 3
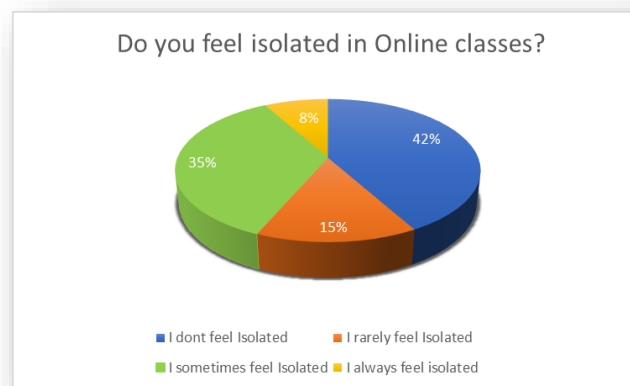

Diagram 11. Do you feel isolated in online classes?

Finally, students revealed that the main factors affecting their engagement were concentration, stress, time management, tools used in class, and teachers' class. The last two were recognized by students they improved after Covid-19 but just at a medium level, not at what was required for the third level of education.

Regarding the importance of social interaction, the primary research supported the outcomes of Moore and Gilmartin's (2010) literature review, but for this study, just the interaction with classmates was valued. While the interaction with staff and teachers was not counted as part of the engagement, students rather have just basic communication with them. Also, this research reinforced that the content of the classes could affect the students' engagement.

Nevertheless, there was a variance in the results related to Isolation. While authors such as Buckley et al. (2021) and Bergdahl and Nouri (2020) demonstrated students felt disconnected

and isolated from the class. This study revealed that 42% of students didn't feel isolated and another 35% felt alone just sometimes.

Hybrid learning had different requirements than education used to have. In F2F classes the interaction between the people around there was primordial. Hybrid learning in third-level education proposed that interaction took second place. Therefore, the outcomes of this section gave this research a panorama of what was required to keep the attention to engage the students based more on the content of the class and the environment of the online classes rather than interaction.

Chapter 5. Conclusions

The pandemic forced colleges to take huge technological steps and decisions in education. It was recognized that this situation was a surprise for everyone, and important challenges were presented to students, staff, lecturers, and the college. Even though education wasn't prepared for all these challenges, they knew how to deal with the situation, and they took it manageably with successful results.

After Covid-19 people were more adapted. Third-level education had more options to apply hybrid learning classes and different actions were taken such as new approaches, subjects, new technology, tools, and new or improved skills to make the adoption of hybrid learning possible.

Each student was different; therefore, it was important to have a variety of pedagogical and technological approaches to help students to have great outcomes. Lecturers, staff, and schools had a significant responsibility to make this possible. But it was shown that colleges and teachers were not taking advantage of technological tools to deliver classes and being able to offer better options to their students.

To make possible a successful hybrid learning education Teachers, institutions, and staff required constant training not only technologically speaking but also pedagogically as well as enriching the content and turning it into more practical outcomes that helped students be ready for the workplace.

It was presented that students were required to give a huge effort to be able to adopt hybrid learning education and for that, they needed to have an independent orientation where they intended to spend time, self-motivation, and work to be successful in their studies.

To be able to adopt technology and different models were necessary teamwork where students, teachers, staff, Colleges, and government contributed to achieving the goals of effective real-world learning.

In conclusion, from the student's perspective, F2F classes were the best option for them, followed by hybrid. It was revealed that staff, teachers, and Colleges were not taking advantage of technology, and the improvements they presented after Covid-19 were the minimums that were required. Therefore, they were lagging mainly because they did not receive continuous training for these changes. There was still a long way to go to achieve better results and adopt Hybrid learning in Third level education.
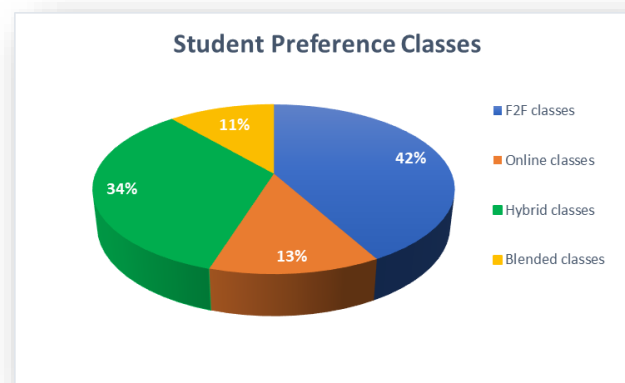

Diagram 12. Students' preference classes

Limitations

It was intended to ask more questions to the participants to get more detailed information for the research. However, there would be a high possibility that it would not be answered by many students. Also, some questions were considered multiple choice, which caused the answers not to show something concrete. Because of the length of the survey was not possible to cover all the topics of this study.

Suggestions

Add interviews with different characteristics such as age, school, and nationality. That can enrich the perspectives of the students.

To get a richer analysis was required to know the students, teachers, school, and staff 's perspectives and compare them.

It would be important to analyze if the training for colleges from Irish institutions applied to all types of universities and that the universities were taking advantage of them

References

BBC news (2020). Republic of Ireland to close schools and colleges. *BBC News*. Available from: https://www.bbc.com/news/uk-northern-ireland-51850811.

Bergdahl, N. and Nouri, J. (2020). Student engagement and disengagement in TEL – The role of gaming, gender and non-native students. *Research in Learning Technology*, 28(0). doi:10.25304/rlt.v28.2293.

Buckley, K., Stone, S., Farrell, A.M., Glynn, M., Lowney, R. and Smyth, S. (2021). Learning from student experience: large, higher education classes transitioning online. *Irish Educational Studies*, 40(2), pp.1–8. doi:10.1080/03323315.2021.1916566.

Bray, A., Banks, J., Devitt, A. and Ní Chorcora, E. (2021). Connection before content: using multiple perspectives to examine student engagement during Covid-19 school closures in Ireland. *Irish Educational Studies*, 40(2), pp.431–441. doi:10.1080/03323315.2021.1917444.

Chiu, T.K.F. (2021). Digital support for student engagement in blended learning based on self-determination theory. *Computers in Human Behavior*, 124(124), p.106909. doi:10.1016/j.chb.2021.106909.

Crawford, C., Barker, J. and Seyam, A. (2014). *CUNY Academic Works CUNY Academic Works The Promising Role Of Hybrid Learning In Community Colleges: The Promising Role Of Hybrid Learning In Community Colleges: Looking Towards The Future Looking Towards The Future*. [online] Available at: https://academicworks.cuny.edu/cgi/viewcontent.cgi?article=1125&context=bm_pubs

Cullinan, J., Flannery, D., Harold, J., Lyons, S. and Palcic, D. (2021). The disconnected: COVID-19 and disparities in access to quality broadband for higher education students. *International Journal of Educational Technology in Higher Education*, 18(1).

Department of the Environment, Climate and Communications (2021). Update on the delivery of the National Broadband Plan - Winter 2021. *www.gov.ie*. Available from: https://www.gov.ie/en/press-release/fc980-update-on-the-delivery-of-the-national-broadband-plan-winter-2021/ [Accessed September 7, 2022].

Department of Further and Higher education, research, innovation and science (2022). *Funding the Future Investing in knowledge and skills: Ireland's competitive advantage*. [online] *gov.ie*, pp.2–20. Available at: https://www.gov.ie/en/organisation/department-of-higher-education-innovation-and-science/ [Accessed 2 Sep. 2022].

Farrell, O. and Brunton, J. (2020). A balancing act: a window into online student engagement experiences. *International Journal of Educational Technology in Higher Education*, 17(1). doi:10.1186/s41239-020-00199-x.

Flair, I. (2022) Technology in education. *EBSCOhost*. Available from: https://eds.s.ebscohost.com/eds/detail/detail?vid=2&sid=3950f7b6-00d2-4b2f-b0a3-42e3984a2d10%40redis&bdata=JkF1dGhUeXBlPXNoaWImc2l0ZT1lZHMtbGl2ZQ%3d%3d#AN=89677647&db=ers [Accessed August 29, 2022].

Fitzpatrick, L. and Mcstravock, K. (2020). *Foreword | Réamhrá*. Available from: https://usi.ie/wp-content/uploads/2020/07/COVID_RESEARCH_FINAL.pdf

Foley, T. (2020). *Faculty and student attitudes and experiences of blended learning in postgraduate programmes: a case study in an Irish university*. Doctoral Thesis. *Cork Open Research Archive (CORA)*, pp.1–223.

Gaebel, M. (2020). *Expert Voices*. [online] www.eua.eu. Available at: https://www.eua.eu/resources/expert-voices/178-covid-19-and-digitally-enhanced-learning-and-teaching-new-opportunities-in-challenging-times.html [Accessed 15 Jul. 2022].

Gaebel, M. and Stoeber, H. (2022). *One year of Covid-19: the impact on European higher education BRIEFING*. [online] Available at: https://www.eua.eu/downloads/publications/one%20year%20of%20covid19%20the%20impact%20on%20european%20higher%20education_final.pdf [Accessed 14 Sep. 2022].

Hesse-Biber, S.N. and Leavy, P. (2010). *Handbook of Emergent Methods*. [online] *Google Books*. New York, USA: Guilford Press. Available at: https://books.google.ie/books?hl=en&lr=&id=ZimnUvfmE-0C&oi=fnd&pg=PR1&dq=Hewson [Accessed 2 Nov. 2022].

Holbrey, C.E. (2020). Kahoot! Using a game-based approach to blended learning to support effective learning environments and student engagement in traditional lecture theatres.

Technology, Pedagogy and Education, 29(2), pp.191–202.
doi:10.1080/1475939x.2020.1737568.

Irish National Forum (2020). *Irish National Digital Experience (INDEx) Survey: Findings from students and staff who teach in higher education*. p.36.

Kazu, İ., Cemre, K. and Yalçın (2022). Investigation of the Effectiveness of Hybrid Learning on Academic Achievement: A Meta-Analysis Study. International Journal of Progressive Education, [online] 18(1), p.2022. doi:10.29329/ijpe.2022.426.14.

Kryukov, V. and Gorin, A. (2017). Digital technologies as education innovation at universities. *Australian Educational Computing*, [online] 32 (1)(1), p.32. Available at: https://web.archive.org/web/20180410022055id_/http://journal.acce.edu.au/index.php/AEC/article/viewFile/114/pdf.

Limone, P. (2021). *Towards a Hybrid Ecosystem of Blended Learning within University Contexts*. [online] Available at: http://ceur-ws.org/Vol-2817/paper26.pdf [Accessed 1 Oct. 2022].

Lin, O., (2008). Student views of hybrid learning: A one-year exploratory study. *Journal of Computing in Teacher Education*, *25*(2), pp.57-66.

Lowry, C. (2022). €6.4m Funding Allocation to Drive Teaching and Learning Innovation and Enhancement Across the Higher Education Sector. *National Forum for the Enhancement of Teaching and Learning in Higher Education*. Available from: https://www.teachingandlearning.ie/2022/06/30/e6-4m-funding-allocation-to-drive-teaching-and-learning-innovation-and-enhancement-across-the-higher-education-sector/ [Accessed September 7, 2022].

McKiernan, L. (2022). *Digital education in the disciplines: A snapshot of digital teaching, learning & assessment practices in Science, Technology, Education and Mathematics*. [online] *Trinity Access to Research Archive*, pp.1–22. doi:10.1038/s41404-022-1085-4.

Moore, N. and Gilmartin, M. (2010). Teaching for Better Learning: A Blended Learning Pilot Project with First-Year Geography Undergraduates. *Journal of Geography in Higher Education*, 34(3), pp.327–344. doi:10.1080/03098265.2010.501552.

National Forum for the Enhancement of Teaching and Learning in Higher Education (2020). *INDEx FINDINGS FROM STUDENTS AND STAFF WHO TEACH IN HIGHER EDUCATION*. pp.1–121.

National Forum for the Enhancement of Teaching and Learning in Higher Education (2020). *THE PROFESSIONAL DEVELOPMENT OF ALL THOSE WHO TEACH TEACHING AND LEARNING IN A DIGITAL WORLD TEACHING AND LEARNING ENHANCEMENT WITHIN AND ACROSS DISCIPLINES STUDENT SUCCESS REFLECTING AND LEARNING: THE MOVE TO REMOTE/ONLINE TEACHING AND LEARNING IN IRISH HIGHER EDUCATION*. [online] Available at: https://hub.teachingandlearning.ie/wp-content/uploads/2021/06/NF-2020-Reflecting-and-Learning-web-ready.pdf [Accessed 1 Oct. 2022].

National Forum for the Enhancement of Teaching and Learning in Higher Education (2021). *Moving Forward Together NEXT STEPS for Teaching and Learning*. [online] Available at: https://hub.teachingandlearning.ie/wp-content/uploads/2021/11/Next-Steps.pdf.

Nepal, R. and Rogerson, A.M. (2020). From Theory to Practice of Promoting Student Engagement in Business and Law-Related Disciplines: The Case of Undergraduate Economics Education. *Education Sciences*, 10(8), p.205. doi:10.3390/educsci10080205.

O'Brien, W., Adamakis, M., O' Brien, N., Onofre, M., Martins, J., Dania, A., Makopoulou, K., Herold, F., Ng, K. and Costa, J. (2020). Implications for European Physical Education Teacher Education during the COVID-19 pandemic: a cross-institutional SWOT analysis. *European Journal of Teacher Education*, 43(4), pp.503–522.

O'brien, E. and Chawke, A. (2022). Tell Me a Story: Using Personas to Enhance Student Engagement. *All Ireland Journal of Teaching and Learning in Higher Education (AISHE-J) Creative Commons Attribution-NonCommercial-ShareAlike*, 14(1), p.0.

Olapiriyakul, K. and Scher, J.M., (2006). A guide to establishing hybrid learning courses: Employing information technology to create a new learning experience, and a case study. *The Internet and Higher Education*, *9*(4), pp.287-301.

Quality and Qualifications Ireland (2020). *The Impact of COVID-19 Modifications to Teaching, Learning and Assessment in Irish Further Education and Training and Higher Education*. [online] pp.51–55. Available at: https://www.qqi.ie/sites/default/files/media/file-uploads/The%20Impact%20of%20COVID-19%20Modifications%20to%20Teaching%2C%20Learning%20and%20Assessment%20in%20Irish%20Further%20Education.pdf.

RCSI Pathology Department (2022). *RCSI Pathology Department: Student Engagement Research*. pp.1–17.

Saunders, M.N.K., Lewis, P. and Thornhill, A. (1997). *'Research Methods for Business Students' Chapter 4: Understanding research philosophy and approaches to theory development Participant selection View project*. 8th ed. United Kingdom: Pearson.

Stone, C. and O'Shea, S. (2019). Older, online and first: Recommendations for retention and success. *Australasian Journal of Educational Technology*, 35(1). doi:10.14742/ajet.3913.

Talbert, P., Bailey, B., Frazier, M., Henley, A., Carrington, R. and Walker, R. (2022). Lessons learned from the COVID-19 pandemic: The perspectives of higher education professionals/academic scholars. [online] Available at: https://www.ingentaconnect.com/contentone/aupha/jhae/2022/00000038/00000004/art00006?crawler=true&mimetype=application/pdf [Accessed 15 Sep. 2022].

Tawfik, A. and Lilly, C. (2015). Using a Flipped Classroom Approach to Support Problem-Based Learning Learning Experience Design View project Semantic Search/Recommendation Case Library System View project Using a Flipped Classroom Approach to Support Problem-Based Learning. *Tech Know Learn*, 20:299–315. doi:10.1007/s10758-015-9262-8.

The StudentSurvey.ie National Report Editorial Group (2021). *StudentSurvey.ie National Report 2021 / Student Survey*. [online] studentsurvey.ie. Available at: https://studentsurvey.ie/reports/studentsurveyie-national-report-2021 [Accessed 18 Sep. 2022].

Trentin, G., (2015). Orientating pedagogy towards hybrid learning spaces. *Progress in education*, *35*, pp.105-124.

Torsney, B.M. and Symonds, J.E. (2019). The professional student program for educational resilience: Enhancing momentary engagement in classwork. *The Journal of Educational Research*, 112(6), pp.676–692. doi:10.1080/00220671.2019.1687414.

Yang, L.H. (2021). Online Learning Experiences of Irish University Students during the COVID-19 Pandemic. *All Ireland Journal of Higher Education*, [online] 13(1). Available at: https://ojs.aishe.org/index.php/aishe-j/article/view/499

Zmuda, N. (2022). *Google takeaways from navigating the pandemic*. [online] Think with Google. Available at: https://www.thinkwithgoogle.com/future-of-marketing/digital-transformation/google-navigating-pandemic/ [Accessed 14 Sep. 2022].