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**Using ICT to create an immersive experience  
for students: A study of the post-primary  
Junior Cycle geography and history classrooms**

Item Type	Dissertation
Authors	Larkin, Katie
Download date	2026-04-15 23:25:16
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Using ICT to create an immersive experience for  
students: A study of the post-primary Junior Cycle  
geography and history classrooms.

Katie Larkin

Dissertation submitted in partial fulfilment of the award of Professional Master  
of Education in Post-Primary

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June 2024

## **Abstract**

This small-scale study explored the use of Information and Communication Technologies (ICT) to create immersive experiences for Junior Cycle geography and history classes at post-primary level. Employing a mixed methods approach, the research included online questionnaires and face-to-face semi-structured interviews. Findings revealed that while ICT is widely used and appreciated in these classes, immersive experiences are less common. Findings from the quantitative and qualitative data reported that ICT benefits student engagement, comprehension, and visualisation in geography and history. They also revealed that immersive ICT experiences can help students connect with the real world. However, the data indicates a pressing need, now more than ever, for more training in ICT for post-primary teachers to fully harness these technologies and create more dynamic learning environments for their Junior Cycle geography and history students.

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## **List of Acronyms and Abbreviations**

ICT – Information and Communication Technologies

SEPP - School Experience and Professional Practice

DES – Department of Education and Skills

Advanced SEPP – Advanced School Experience and Professional Practice

DEIS - Delivering Equality in Schools

AI – Artificial Intelligence

SEN – Special Educational Needs

# Chapter 1

## Introduction

### 1.1 Introduction

As society becomes more technologically advanced, the researcher feels it is important, now more than ever, that Information and Communication Technologies (ICT) is incorporated into teaching and learning at post-primary level. It provides both the teacher and the learner with new skills, experiences and opportunities for learning. Technology is constantly changing and so the opportunities to incorporate technology in the classroom is continually developing. This chapter will briefly outline the reasoning behind the decision to research ICT in the geography and history classroom for this dissertation.

### 1.2 Origin of the Dissertation

The researcher's idea for this dissertation was inspired by their own use and implementation of ICT while on School Experience and Professional Practice (SEPP 1). It was during this time that the researcher noticed how ICT can enhance teaching, learning and assessment within the Junior Cycle classroom. Additionally, the student teacher noticed that ICT provided the students with an immersive experience that allowed them to visualise and connect with the subjects of geography and history on a deeper level. ICT has come a long way since the researcher was a student and therefore the researcher feels it is important, now more than ever, to explore the possibilities that ICT can bring to the classroom.

### 1.3 Background to the Project

In 2015, the Department of Education and Skills (DES), the Irish state department responsible for training and education, launched the Digital Strategy for Schools 2015-2020, allocating €210 million to enhance ICT in schools to improve student learning experiences (DES, 2015). Following on from this, the Digital Strategy for Schools to 2027 was announced to further advance the improvements achieved under the previous strategy (DES, 2022). Over the last number of years, especially since the Covid-19 pandemic, teachers and students have utilised the benefits of ICT in the classroom for teaching and learning purposes (Winter et al., 2021). The use of ICT as a means of creating immersive experiences has become a popular practice amongst post-primary teachers as a way of enhancing student

learning as well as improving a student's knowledge of a particular subject (Leissau, Hellbach and Laroque, 2021).

Despite recent investments in ICT for education, many post-primary teachers remain uncomfortable with fully integrating ICT in their classrooms (DES, 2008). McCoy et al. (2016) highlight that teachers' lack of ability and confidence is a major barrier for ICT development in education. Although there have been significant improvements in ICT over the past decade, some schools and teachers still lag in ICT usage (DES, 2015). In Ireland, post-primary schools have the autonomy to govern themselves, leading to varied technology usage and oversight. Consequently, the extent of ICT usage in these schools depends largely on the willingness and capabilities of individual teachers (Marcus-Quinn, Hourigan, and McCoy, 2019).

#### **1.4 Rationale**

It is hoped that this research project will assist both the researcher and other post-primary teachers in evaluating and enhancing the use of ICT for teaching, learning, and assessing Junior Cycle geography and history. The 2017 Digital Learning Framework for post-primary schools offers guidance on ICT usage in classrooms (DES, 2017). While helpful, such frameworks do not fully explore the potential capabilities ICT can create for students in classroom settings.

The main aims of this research project are to investigate the impact of using ICT in the classroom and to examine teacher perspectives surrounding the use of ICT as an immersive experience for students. Additionally, this project will assess the level of training and confidence amongst post-primary teachers surrounding the implementation of ICT and aims to build upon the knowledge of using ICT in the classroom to achieve improved student outcomes.

#### **1.5 Dissertation Layout**

This research project is organised into six chapters. The first chapter explains the rationale and reasoning behind the dissertation. The second chapter reviews existing literature regarding the use of ICT in geography and history classrooms, including research on immersive learning as a method to enhance student learning. The third chapter details the methods and paradigm chosen for the research. Chapter four presents the research findings, which are then discussed in chapter five. The final chapter concludes the dissertation.

## **1.6 Conclusion**

As society becomes more technologically advanced, the researcher is of the opinion that it is important, that ICT is incorporated into teaching and learning at post-primary level. The next chapter will examine the existing literature that has been written in the context of ICT and immersive technologies at post-primary level. To get a better understanding of the effectiveness and benefits of ICT in the classroom, the next chapter will explore research that has been carried out in an Irish context and a global context.

# **Chapter 2**

## **Literature Review**

### **2.1 Introduction:**

In 2018, Ireland was recognised for high levels of internet growth, predominantly occurring within homes rather than educational settings (OECD, 2018). According to research, educational ICT is predicted to grow in the upcoming years due to the rising availability and demand for new technologies (Tripathi and Prasad, 2022). This literature review will examine the relevant literature surrounding the use of ICT in both an Irish post-primary context but also from a global educational context. A critical review of the impacts of ICT for students will be discussed, along with an examination of the literature surrounding the role of the teacher in ICT. Finally, a discussion surrounding the use of ICT as an immersive experience will be explored.

### **2.2 Irish Context:**

Every school in Ireland is individually responsible for their own implementation of ICT. It is also the responsibility of the school to decide how ICT is delivered or integrated into a school (Marcus-Quinn, Hourigan, and McCoy, 2019). However, very little guidance is provided to schools or teachers on how best to do this. In recent years, Marcus-Quinn, Hourigan, and McCoy (2019) have highlighted the lack of policies and unclear guidance from the DES surrounding the correct integration of ICT in post-primary schools. Strategies like the Digital Strategy for School 2021-2027 have recognised the lack of awareness amongst post-primary teachers in relation to the resources available to them and the time needed by teachers to advance their technology skills (DES, 2022). However, further research is needed to highlight the ways in which the DES could advise post-primary schools about how best to integrate ICT.

While Feerick, Clerkin, and Cosgrove (2022) point out that Irish post-primary schools are more developed than Irish primary schools with regards to broadband, infrastructure and connectivity, Marcus-Quinn, Hourigan, and McCoy (2019) are quick to point out that ICT usage in post-primary schools around Ireland is in no way equal. No two schools have evolved or developed their ICT in the same way. This level of diversity and inconsistency in schools was clarified by McGarr and McDonagh (2013) who studied the role of the ICT coordinator in a variety of different schools and discovered that each school was responsible for creating their own vision and approach for ICT in the school. They revealed that there was

no collaboration between schools about integrating ICT and that ICT coordinators were unsure of their role within the school. Further research is needed to uncover why schools are given so much autonomy with regards to their ICT integration and why there is no framework in place to regulate and ensure the use of ICT is equal amongst Irish post-primary schools.

Additionally, research by McAteer et al. (2021) indicates that the availability of technology for students at post-primary level in Ireland is lower than the availability of technology for students in other OECD countries. While McAteer's et al. (2021) study highlighted that ICT is catered for better in DEIS (Delivering Equality of Opportunity in Schools) schools as opposed to non-DEIS schools, Irelands access to ICT infrastructure still lags behind.

Countries like Australia and the Netherlands both scored higher than Ireland and the OECD average with regards to ICT availability at post-primary level (OECD, 2015). McAteer et al. (2021) point out that despite tremendous progress, notably in DEIS schools, Ireland still has a long way to go before reaching equality with the most advanced OECD nations in terms of ICT integration.

Looking at the research carried out on ICT in the geography classroom, studies include using spatial technologies in the classroom to visualise information (Chaffer, 2020), visualising geographical space and time (Shapiro and Garner, 2022) and incorporating virtual reality technology to teach geography (Niu et al., 2023). None of these however focus on the Irish geography classroom. From reviewing the literature, there is very little research carried out on the use of ICT in Irish post-primary geography classes. Similarly, for the subject of history, there has been research carried out on the role of ICT in the history classroom (Simkin, 2018; Wojdon 2016), however none from an Irish context. With regards to research conducted on ICT for both subjects together, as intended for this research project, very little research exists on the two subjects together and virtually nothing has been studied in an Irish post-primary school context.

### **2.3 Covid-19:**

Additionally, the impact of Covid-19 on technology and education in Ireland cannot be understated. The role that ICT plays and how teachers incorporate technology into their lessons was most notable during the pandemic (Kilcoyne, 2021). Research in the last number of years has focused on the impact of the pandemic on education. Bray et al. (2021) have focused on the use of technology for online learning during school closures in Ireland and how effectively technology engaged students at home. Technology has also allowed for better

communications between students and teachers in Irish post-primary schools which continues to benefit and advance school communities today (Marcus-Quinn and Hourigan, 2022).

#### **2.4 International Context:**

Throughout the world, digital literacy is regarded as highly important for all students to acquire (Marcus-Quinn, Hourigan, and McCoy, 2019). While the teacher is often seen as the driver of technology in schools, research by Gu, Wu and Xu (2015), for example, has proven that technology is being encouraged and promoted by government initiatives in countries like the United Kingdom, France, Singapore and the United States of America. Their report found that technology was driven by the government in a total of twenty different countries internationally. Separately, in the Netherlands, the Dutch Minister for Education created an open education resource for teachers to share, collaborate and connect resources with other teachers (Schuwer, Kreijns and Vermeulen, 2014). Irish researchers Marcus-Quinn, Hourigan, and McCoy (2019) have shed light on how this Dutch approach puts ICT at the centre of student education. However, Dutch researchers Schuwer, Kreijns and Vermeulen (2014) are quick to point out that this strategy was not in line with the goals set out by the Dutch government.

It is however important to keep in mind the digital divide that is present regarding ICT availability in schools in different parts of the world. Access to technologies is not the same for developing countries as it is for developed countries. While access to technologies is improving globally, a student's ability to use and engage with technology effectively remains an entirely different challenge (Azzolini and Schizzerotto, 2017). More research is needed to uncover the difficulties of digital inequality around the world.

#### **2.5 Teachers and ICT usage in Irish Post-Primary schools:**

Unfortunately, recent literature indicates that teacher training in ICT is lacking in Ireland. McCoy et al. (2016) regards a teacher's ability and confidence in using ICT as one of the main enablers for technological development within a school. They argue that the best way to overcome difficulties or barriers with technology in a school is through professional teacher development and learning. However, research has found that Irish post-primary teachers do not have the appropriate training or skills to develop and incorporate a digitally orientated classroom (Winter et al. 2021). This prevents teachers from developing themselves as ICT integrators and stops them from providing rich digital environments for their students learning.

More recently, Feerick, Clerkin and Cosgrave (2022) highlighted the need for more professional training for teachers surrounding ICT. They suggest more subject specific training in technologies as opposed to generalised training which can often be harder to integrate for certain subjects. While the DES puts emphasis on the important role teachers play in enabling technological change within a school (DES, 2015), little is being done to provide teachers with the necessary training for schools to become technologically advanced. While the Digital Learning Framework for Post-Primary Schools was published in 2017 and provided guidance for post-primary teachers about how best to use ICT to support teaching in the post-primary classroom, learning and assessment in the classroom, more resources and training is necessary. (DES, 2017).

Although Marcus-Quinn and Hourigan (2022) have suggested the creation of a standard to help teachers guide and navigate digital technologies in the classroom, little research has been carried out on the level of training being provided to post-primary teachers in Ireland. A closer look at the training required is certainly needed, particularly for subject specific teachers. This would allow teachers to use ICT for a variety of different methods which would not only improve student learning but also engagement in the subject (Conway et al. (2009).

## **2.6 The impact of ICT:**

The benefits of ICT in education have been studied time and time again. According to research carried out by Ahmadi, Keshavarzi and Foroutan (2011), ICT provides opportunities for more comprehensive teaching and learning, builds upon critical thinking and problem-solving skills as well as improves student learning. More recently, researchers like Tripathi and Prasad (2022) have reiterated this sentiment taking their findings further by recognising the importance of collaboration and organisation for ICT to improve student outcomes.

It is also important to note the extensive research that has been carried out on the role technology plays for students with learning disabilities. Studies have shown the benefits and popularity of technology usage for students with autism (Odom et al., 2015), the role ICT plays for students with visual impairments (Tuttle and Carter, 2022) and using ICT to aid students with hearing impairments (Miller, 2015). It is clear from the literature that ICT offers students with disabilities the opportunity to participate in their learning without obstacles. It could be argued however that there has been minimal research conducted regarding the

negatives of ICT for students with disabilities. Perhaps a deeper insight into the most suitable technologies for students with disabilities is required.

There has however been research carried out into the negative impact on students in general. Some studies have discovered that there is no relationship between ICT usage and academic performance (Petko et al., 2016). While others have recognised a negative relationship between ICT use and academic performance. According to Gorjón and Osés (2022), ICT usage in class has a negative impact on students' academic results with factors such as reduced face-to-face interactions, over reliance on technology and increased distractions being discussed. While Gorjón and Osés (2022) identify significant obstacles associated with ICT usage in classrooms, they also highlight the importance of thoughtful and well-supported integration of technology to harness effective benefits in the classroom.

### **2.7 Immersive Experiences:**

Information technology, particularly interactive technology, provides students with the opportunity to learn through an immersive experience, either individually or as a group, and allows them to visualise concepts that may be difficult to understand (Leissau, Hellbach and Laroque, 2021). From the literature, there are many different definitions and opinions regarding the meaning of immersive experiences. Dengel (2022) describes immersive learning experiences as 'artificial experiences' in the classroom, while Fernandes et al. (2022) refers to immersive experiences as 'human computer interfaces.' What all the relevant literature does agree on is how immersive experiences involve learning that is interactive in order to teach or replicate ideas to students either physically or virtually.

Over the last number of years, learning through immersive experiences has become increasingly popular in education (Kuhail et al., 2022). Akçayir and Akçayir (2017) studied the advantages of immersive technologies in the classroom. Their study revealed that immersive technology has the potential to enhance student achievement. Similarly, Williams et al. (2021) highlighted in their research the capability immersive experiences can have for improving social collaboration and engagement amongst students in the class, while Kuhail et al. (2022) noted the potential immersive experiences had for improving classroom participation and engagement. There is, however, very little research into the number of teachers who are actively incorporating immersive learning experiences into their lessons in post-primary schools here in Ireland. Perhaps further research into teachers and their use of immersive experiences would be beneficial.

Immersive experiences can be incorporated into the classroom in several different ways. Immersive technologies using virtual reality, augmented reality and mixed reality have become incredibly popular over the last number of decades as a way of bringing the real world into the classroom (Fernandes et al., 2022). Studies conducted into the use of immersive technologies to aid certain second level subjects are more abundant and widely available than others. For example, Kuhail et al. (2022) highlighted in their literature the number of studies completed in science subjects as well as the subject of history. While there has not been the same degree of research undertaken into the use of immersive experiences for the teaching and learning of geography, Graham (2017) highlights the advantages and effectiveness of immersive technologies for geography.

Technology and immersive experiences allow students to connect what they have learned in theory with the real world (Leissau, Hellbach and Laroque, 2021). They also allow students to develop skills that are not always possible to develop with traditional pedagogical methods (Leissau, Hellbach and Laroque, 2021). However, it is worth noting the challenges of implementing immersive technologies in the classroom. Akçayir and Akçayir (2017) highlights how technical problems can make its use difficult while both students and teachers may have difficulty operating or understanding how to use different technologies.

## **2.8 Conclusion:**

Upon reviewing the literature surrounding the use of ICT in education, the use and incorporation of ICT in post-primary schools has become a popular area of research in recent years, particularly since the Covid-19 pandemic. The extensive literature undertaken on the topic of ICT highlights how significant technology has become not only for education but in everyday life. Research has shed light on the many opportunities that ICT can provide for students, particular the studies undertaken into the use of ICT as an immersive experience in the classroom to improve student engagement and knowledge of a particular subject. Having considered the relevant literature, this research aims to answer the following questions:

- Why are teachers using ICT in the classroom to create immersive learning experiences for Junior Cycle geography and history students?
- How effective is ICT as a method of helping Junior Cycle students to visualise, engage with and better understand the subjects of geography and history?
- Do post-primary teachers feel equipped and confident to use ICT when teaching Junior Cycle geography and history?

# Chapter 3

## Methodology

### 3.1 Introduction:

The researcher aims to investigate how teachers are using ICT to create immersive experiences and to establish how effective ICT is for Junior Cycle geography and history students at post-primary level. Having identified these research questions, the researcher was conscious to choose an appropriate approach to the research that would be most suited to this project. This chapter details the research methodology and paradigm chosen for this study. The research design as well as the participants of the study will be discussed. The researcher will also provide details surrounding the collection and analysis of data, followed by examining the limitations and ethical considerations of the study.

### 3.2 Research paradigm:

According to Pickard (2013), a paradigm is a view that guides the nature of a particular area of research. Upon considering the different research paradigms and exploring which paradigm would best suit the nature of this project, the researcher felt a pragmatist approach would be best suited for this research project. Pragmatism incorporates elements of both positivism and interpretivism (Dawadi, Shrestha and Giri, 2021). Positivism focuses on objective, quantifiable data and the application of scientific methods to understand data, whereas interpretivism focuses on people's subjective experiences and the meanings they attach to social interactions (Pickard, 2013).

Typically, positivism and interpretivism are identified in contrast to each other, however the researcher regarded the pragmatic approach of combining the two approaches and rejecting the division that exists between the two as the most suitable approach for this project. Over the last two decades, several authors have been cited to associate their choice of pragmatic paradigms with their choice of a mixed methods methodology (Feilzer 2010; Morgan 2007).

### 3.3 Methodology:

The methodology of a particular research project refers to the approach the researcher decides to take to answer their desired questions (Pickard, 2013). In line with the research paradigm, the researcher decided to use a mixed-method methodology for this research project. Creswell (2015) describes mixed-method research as the integration and combination of

qualitative and quantitative methods to answer a research question. By making use of both qualitative and quantitative methods, the researcher feels that this combination of methodologies will allow for a more comprehensive research project.

According to Blaxter, Hughes and Tight (2010), using a mixed-methods methodology allows the researcher to integrate findings with collected data to formulate conclusions. Similarly, Babione (2015) outlines how qualitative research can often provide general background information while quantitative research can provide more comprehensive information which allows researchers to address any gaps that may have arisen. It was with this in mind that the researcher decided to use a flexible methodology as this would allow any general data to compliment and fill in the gaps for more detailed data (Babione, 2015).

Additionally, the researcher is using mixed methods, in the hope that this will provide a better understanding surrounding the use of ICT in the Junior Cycle geography and history classroom. Dawadi, Shrestha and Giri (2021) highlight how using mixed methods is significant as it allows researchers to explore with ‘sufficient depth and breadth’, which will in turn expand their research (Dawadi, Shrestha and Giri, 2021, p. 27). This is achieved by allowing quantitative data, which typically involves close-ended questions, to compliment and support qualitative data, which often involves open-ended questions (Dawadi, Shrestha and Giri, 2021).

It is often possible for researchers to place a greater value or weight on one methodology over the other when undertaking a mixed methods approach (Dawadi, Shrestha and Giri, 2021). The researcher must ensure that equal value is given to both procedures and that both the quantitative and qualitative are appropriately combined. A mixed methods methodology also runs the risk of delivering contradicting results (Dawadi, Shrestha and Giri, 2021).

### **3.4 Approach:**

A research approach refers to the overall strategy of the study and is driven by the motivation of the researcher (Pickard, 2013). This research project will take the form of a survey approach through questionnaires and face-to-face interviews. This approach can ensure uniformity in the questions being asked and allows for consistent data to be collected.

Research has highlighted the importance of carrying out on-site data collection as it provides the researcher with the opportunity for direct interaction during the study (Taherdoost, 2022). As the researcher will undertake this investigation in a post-primary school while on Advanced School Experience and Professional Practice (Advanced SEPP), it was for this

reason that a survey approach was decided upon for this research project. This meant that the researcher had access to onsite data collection while in the school.

### **3.5 Research methods:**

Incorporating a mixed methods approach allowed the researcher to employ a flexible approach when collecting data. Quantitative data was gathered through the distribution of online questionnaires to teachers (see Appendix A). Twelve teachers from the history department and twelve teachers from the geography department were approached to participate in the study. Ten teachers from the history department and ten teachers from the geography department in the same school returned consent forms and questionnaires. A total of twenty returned online questionnaires were collected. The researcher decided to carry out questionnaires because they provide the study with both anonymous and objective data (Dawadi, Shrestha and Giri, 2021). Consisting of closed-ended questions, the researcher made sure that the questions were clear, precise, and relevant to the study (see Appendix A). The choice to use an online questionnaire was influenced by Kuada's (2012) acknowledgement of online questionnaires. He reveals that online surveys are twice as fast as traditional written questionnaires and can be completed in the participant's own time.

Qualitative data for this research project was gathered through semi-structured face-to-face interviews with selected teachers. Two teachers, one history and one geography, who did not complete the questionnaire were selected for interview. These two teachers were chosen from the same school that the questionnaires were completed. Each interview was scheduled for a duration of 30 minutes. These interviews provided the researcher with more descriptive data and allowed the researcher to understand the subject in greater detail. (Creswell, 2013). Semi-structured interviews were chosen as the best approach to interviewing for this project as they not only allowed the researcher to compile a list of set questions to ask but also provided the freedom to vary the order of certain questions depending on the participant. In addition, semi-structured interviews allow for additional questions to be asked with the aim of delving deeper into the subject at hand (Kuada, 2012). The researcher designed open-ended questions to gain a deeper insight into the participants experiences (Kuada, 2012). Questions were decided upon in advance of the interview and printed on an interview schedule (see Appendix B).

While there are several types of mixed methods, this research project followed the Explanatory Sequential design. This design involves collecting and analysing the quantitative

data before collecting and analysing the qualitative data (Creswell and Plano Clark, 2018). This meant that the researcher carried out the questionnaires with teachers before conducting the interviews. This design allows the researcher to expand on the quantitative findings in the questionnaires by following up with qualitative interviews (Wisdom and Creswell, 2013).

For the questionnaires, a pilot questionnaire was conducted with one history teacher and one geography teacher to ensure that all questions were designed clearly and free from leading or double barrel questions. No issues arose from either piloted questionnaire. As no issues were detected, the results from both piloted questionnaires were included with the overall results.

### **3.6 Sample and participants:**

The participants of this research were teachers identified from a mixed DEIS post-primary school in which the researcher was completing their Advanced SEPP. The school is in a rural Irish town, with over 850 students and over 90 teachers.

A purposive sample method was used for this research project. This non-probability sampling method allowed the researcher to handpick certain teachers within the school (Cohen, Manion and Morrison, 2011). As Cohen, Manion and Morrison (2011) point out, purposive sampling allows a researcher to select a sample that is precisely suited to the study. For this reason, the researcher selected participants for the teacher questionnaire who were qualified post-primary teachers and were chosen based on teaching the Junior Cycle subjects of geography, history or in some cases both subjects. These identified teachers were approached during school hours to participate in the study. Teachers with varying years of experience were selected. It is hoped that this will provide an insight into the use of ICT amongst newly qualified teachers and teachers with years of teaching experience behind them.

Each identified teacher was provided with an information sheet with background information about the research project as well as consent forms (see Appendix C and D). All participants were notified that the study had obtained ethical approval from the Ethics Committee in Hibernia College. Any teacher that returned a consent form was emailed the questionnaire to complete.

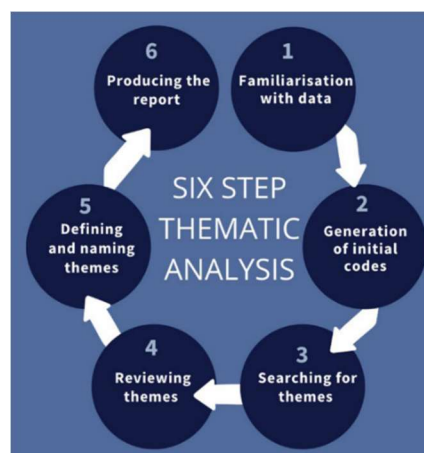
Following the questionnaire, one history teacher and one geography teacher, who had not completed the survey, were chosen for interview. Undertaking these interviews, allowed the research to gather a deeper understanding of the use of ICT in the Junior Cycle geography and history classroom. Again, prior to the interview, each participant was provided with an

information sheet (see Appendix C) about the project and consent form (see Appendix D). Both interviews took place within the school premises, were recorded using an iPhone and later transcribed.

### 3.7 Data analysis:

As this research project combines both quantitative and qualitative research methodologies, both statistical analysis and thematic analysis were used to analyse the primary data collected from the online questionnaires and semi-structured interviews respectively. The online questionnaires were created on Google Forms and later exported into Microsoft Excel to code the data. From there the data was displayed in charts and graphs. According to Firth (2020), using charts and graphs helps to make analysing and discussing findings more visually appealing. The visualisation of the data allowed the researcher to statistically analyse the data from the online questionnaires. Both interviews that were carried out were audio recorded. The audio was then transcribed for the researcher to thematically analyse the data. Thematic analysis refers to the categorisation of certain themes or words frequently used in a text (Firth, 2020). Once the interviews were completed, the researcher applied Braun and Clarke's (2012) process of identifying themes from data.

Transcripts and notes from the interviews were thoroughly studied and analysed to become familiar with the information (see Appendix E). Braun and Clarke's six-steps to thematic analysis, displayed in Figure 1 below were applied. This allowed the researcher to identify and label any patterns in the information with codes (see Appendix F). These codes were then grouped together to form themes, which were then revised and refined to reflect on the findings from the interviews (see Appendix G).



**Figure 1:** Braun and Clarke six-step approach to thematic analysis (Source: McInerney et al., 2022)

### **3.8 Rigour:**

Using a mixed methods approach allows for the triangulation of data. Triangulation refers to the use of multiple methods to achieve a valid and reliable study (Kuada, 2012).

Incorporating both quantitative and qualitative methods is accepted by researchers like Plano Clark and Ivankova (2016) and Bergman (2008) as a means of validating findings from a particular study. In this research project, the findings from the quantitative questionnaires will be compared with the findings from the qualitative interviews to formulate a more accurate conclusion. This triangulation will help to test the validity of the data and improve the reliability of the results (Kuada, 2012).

### **3.9 Limitations:**

A limitation of using a mixed methods approach is that it may take longer to complete than perhaps completing a study using one methodology. This has been highlighted by Dawadi, Shrestha and Giri (2021), who highlights how mixed method research can be a lengthy procedure. As mentioned, the data collection for this research study was conducted while the researcher is completing Advanced SEPP. Being organised and having a schedule proved important when conducting a more time-consuming methodology during an already busy school placement.

### **3.10 Ethical issues:**

Prior to completing this research study, an ethics application form was completed by the researcher and submitted for approval to Hibernia College's Ethics Committee. Complying with Hibernia College's ethics guidelines as well as the British Educational Research Association guidelines (BERA, 2011), the researcher ensured that all aspects of this study adhered to the appropriate ethical standards.

Once approval was obtained by the school principal and the principal letter was returned (see Appendix G), all participants were approached, provided with information sheets (see Appendix C) detailing the nature of the study and consent forms (see Appendix D).

According to Bell and Waters (2014), informed participants are aware of the details of a research project. Participants who returned signed consent forms were allowed to participate. Participation was voluntary and all participants were aware of the opportunity to withdraw at any time.

To protect the identity of the school and the participants, personal identifiers were replaced with pseudonyms. Similarly, when analysing the results, all data that was collected was treated with the upmost confidentiality.

### **3.11 Conclusion:**

A mixed-method methodology was chosen for this research project, combining the use of both quantitative questionnaires and qualitative interviews. A purposive sample of specifically chosen teachers, teaching Junior Cycle geography and history, were chosen to study for this research project. All data obtained and analysed complied with all relevant ethical standards. Potential limitations were discussed, and the findings of this study will be presented in Chapter 4.

# Chapter 4

## Findings

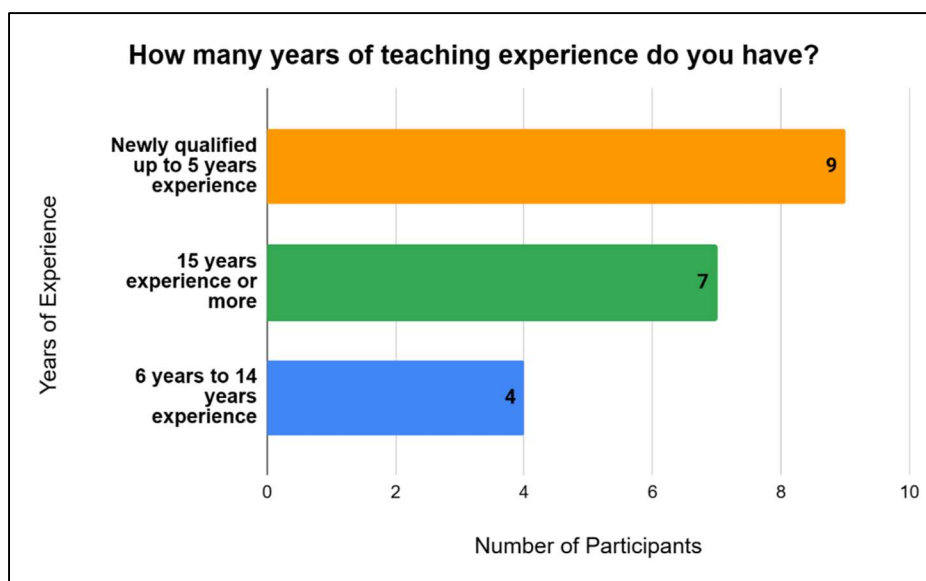
### 4.1 Introduction:

This chapter will present the findings from the quantitative and qualitative research methods used to investigate how teachers are using ICT to create immersive experiences for Junior Cycle geography and history students. Statistical analysis and thematic analysis were used to analyse the primary data collected from the online questionnaires (see Appendix A) and semi-structured interviews (see Appendix B) respectively.

### 4.2 Quantitative findings from questionnaires:

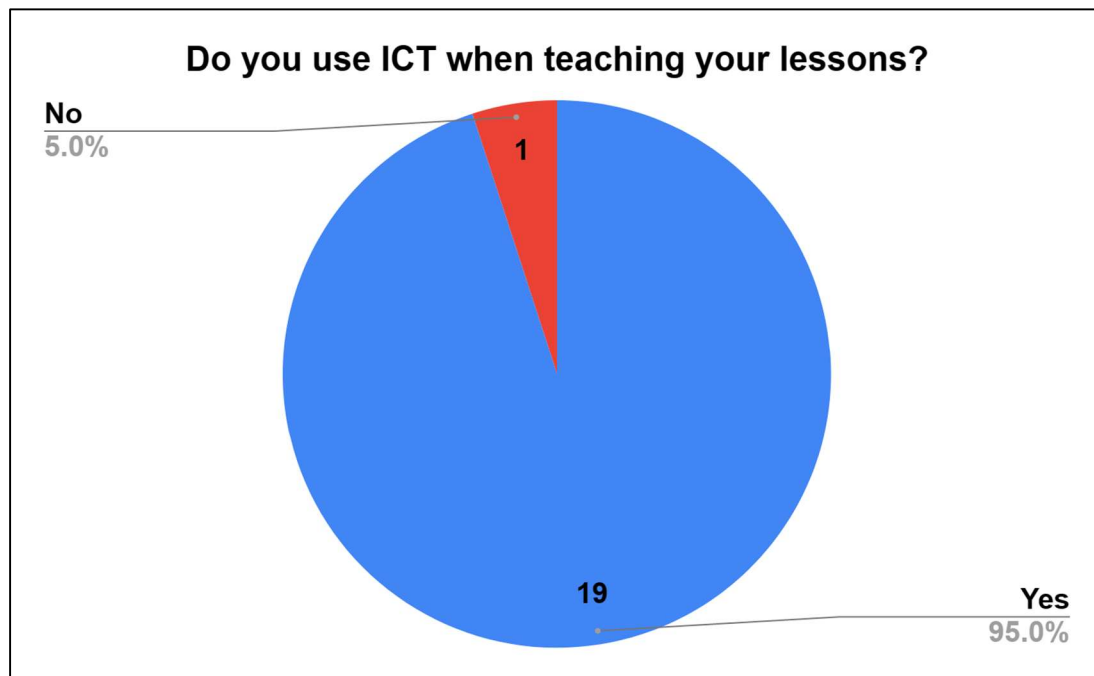
A total of 20 returned online questionnaires were collected (n=20). 45% of respondents (n=9) teach Junior Cycle geography and another 45% of respondents (n=9) teach Junior Cycle history, while the remaining 10% of participants (n=2) teach both subjects. 11 of these respondents were female, while 9 respondents were male.

According to Figure 2 below, of the 20 questionnaire respondents, 9 participants (45%) categorised themselves as newly qualified up to 5 years of experience, 4 participants (20%) had 6-14 years of experience while 7 participants (35%) responded with 15 or more years of experience.



*Figure 2: How many years of teaching experience each questionnaire participant had.*

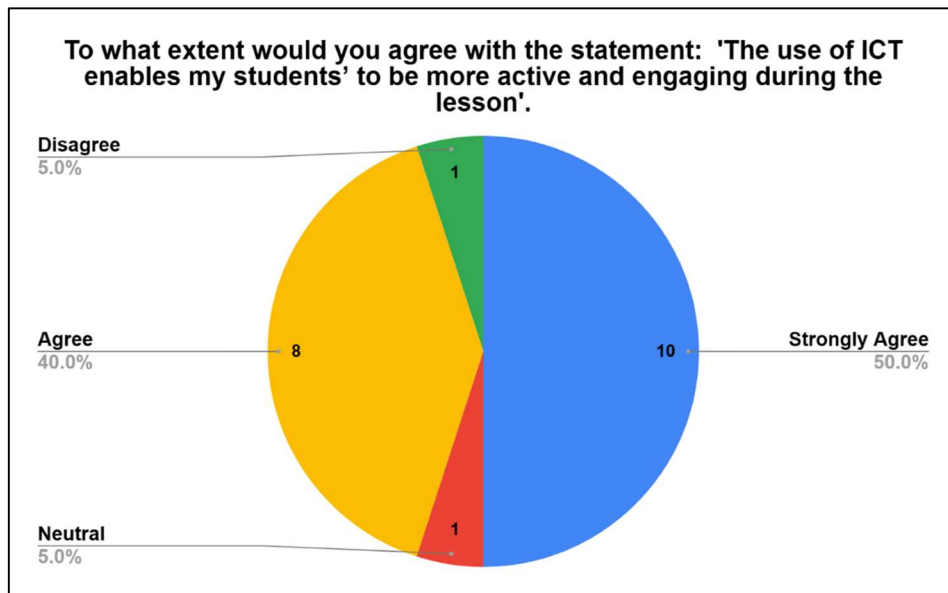
The questionnaires shed light on the importance of ICT for teachers when teaching, with 95% of participants (n=19) revealing that they use ICT in their lessons. As evident from Figure 3 below, only one participant (n=1), stated that they did not use ICT in their lessons. This respondent categorised themselves as newly qualified up to 5 years of experience.



**Figure 3:** Do you use ICT when teaching your lessons.

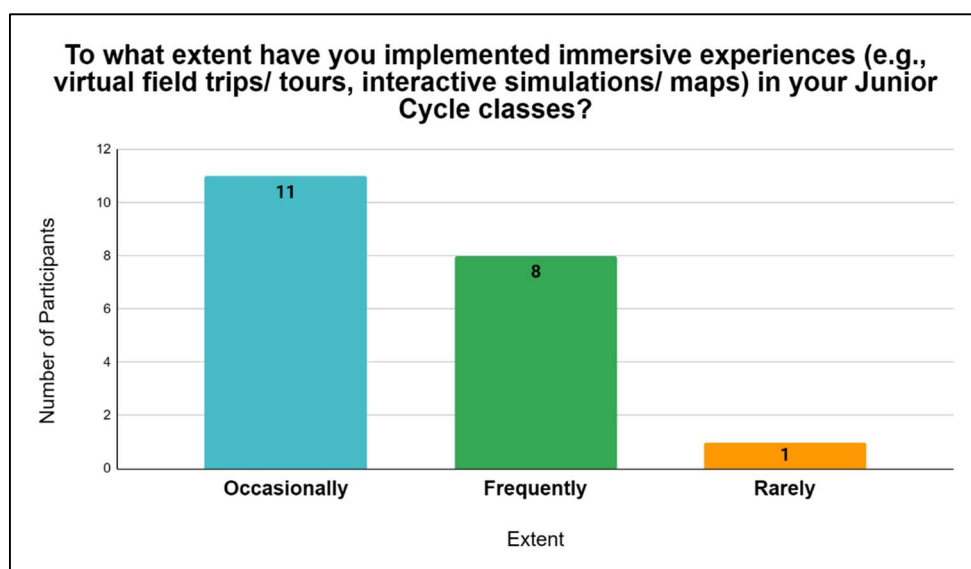
The same participant was the only respondent who responded 'rarely' when asked to what extent they integrate ICT into their classes. This is in direct contrast to the remaining 19 respondents who stated that they 'always' integrate ICT (n=9), 'frequently' integrate ICT (n=9) and 'occasionally' integrate ICT (n=1).

The questionnaire provided an insight into the number of teachers who find it easier to teach their subject using ICT. 45% of respondents (n=9) chose to 'strongly agree', 50% of respondents (n=10) chose to 'agree' while the remaining 5% (n=1) chose to 'disagree'. When asked to what extent they believed ICT enables their students to be more active and engaging during their lessons, half of all respondents (n=10) said they 'strongly agreed', while a further 40% of respondents (n=9) 'agreed' that it made their students more active and engaging (see Figure 4 on the next page). 1 respondent remained 'neutral' (n=1), while 1 chose to 'disagree' (n=1). Additionally, when questioned whether teachers believe students learn more effectively with the use of ICT, 9 respondents (45%) said they 'strongly agree', 10 (50%) said they 'agree' while 1 (5%) chose to 'disagree'.



**Figure 4:** To what extent would you agree with the statement: 'The use of ICT enables my students to be more active and engaging during the lesson'.

The questionnaire revealed that 95% of participants (n=19) were familiar with the term immersive learning. Only 1 participant (5%) was not familiar with the term. This respondent categorised themselves as newly qualified up to 5 years of experience. While none of the participants selected 'not at all' when asked to what extent they integrate immersive experiences in their classrooms, none of the participants selected 'always' either. As evident from Figure 5 below, the most popular answers were 'frequently' with 40% of participants (n=8), 'occasionally' with 55% of participants (n=11) and 'rarely' with 5% of participants (n=1).

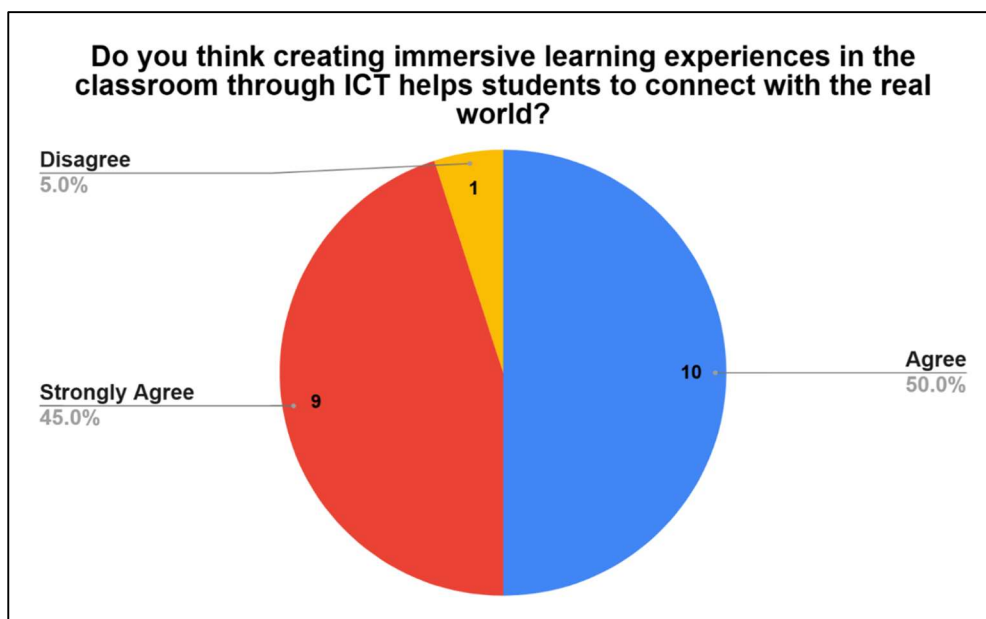


**Figure 5:** To what extent have you implemented immersive experiences (e.g., virtual field trips/ tours, interactive simulations/ maps) in your Junior Cycle classes?

When asked whether ICT provides an immersive experience for students, 1 teacher (5%) chose to remain 'neutral' and another teacher (5%) chose to 'disagree'. However, 8 teachers (40%) said they 'strongly agree' and 10 teachers (50%) said they 'agree'.

It was clear however, that participants of the questionnaires did strongly believe that immersive learning experiences had the ability to visualise the content for the students. 50% of the respondents (n=10) stated that they 'strongly agree' that immersive learning was an effective way of allowing students to visualise and better understand the subject, while the remaining 50% of the respondents (n=10) stated that they 'agree'. No participant remained 'neutral', 'disagreed' or 'strongly disagreed' with this question.

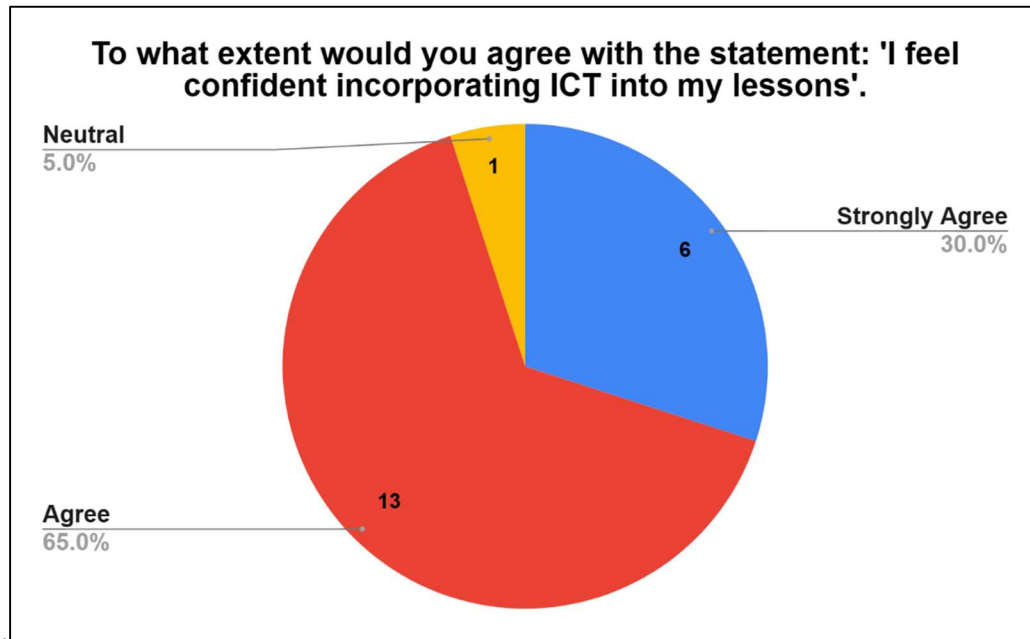
Additionally, apart from one participant (5%) who stated that they 'disagree' that immersive learning experiences help students to connect to the real world, the remaining 95% of participants (n=19) felt that immersive learning did allow students to connect to the real world. 45% (n=9) said they 'strongly agree', while 50% (n=10) said they 'agree' (see Figure 6 below).



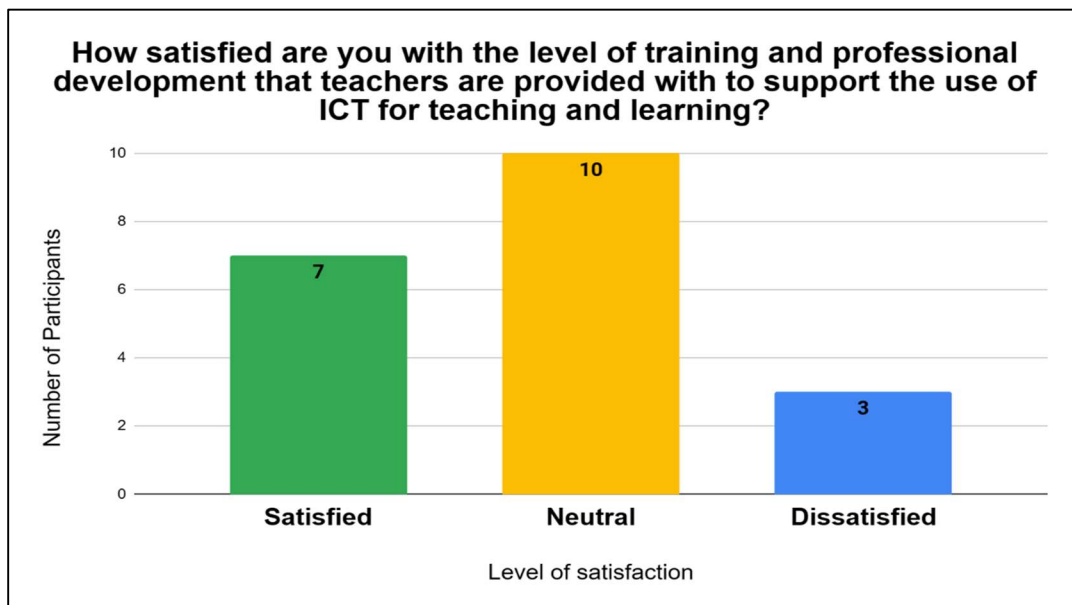
**Figure 6:** Do you think creating immersive learning experiences in the classroom through ICT helps students to connect with the real world?

When asked how confident the participants felt about incorporating ICT into their lessons, while 5% (n=1) of respondents stated that they were 'neutral', 30% (n=6) selected 'strongly agree' and 65% (n=13) selected 'agree' (see Figure 7 on the next page). There was however a resounding need for more training in ICT for teachers from the questionnaires. When asked how satisfied teachers were with the level of training and professional development that

teachers are provided with to support the use of ICT for teaching and learning, no participant felt that they were ‘very satisfied’. While 35% (n=7) said they were ‘satisfied’ and a further 50% (n=10) said they were ‘neutral’, Figure 8 below highlights how 15% (n=3) stated that they were ‘dissatisfied’ with the level of training and professional development provided to them.

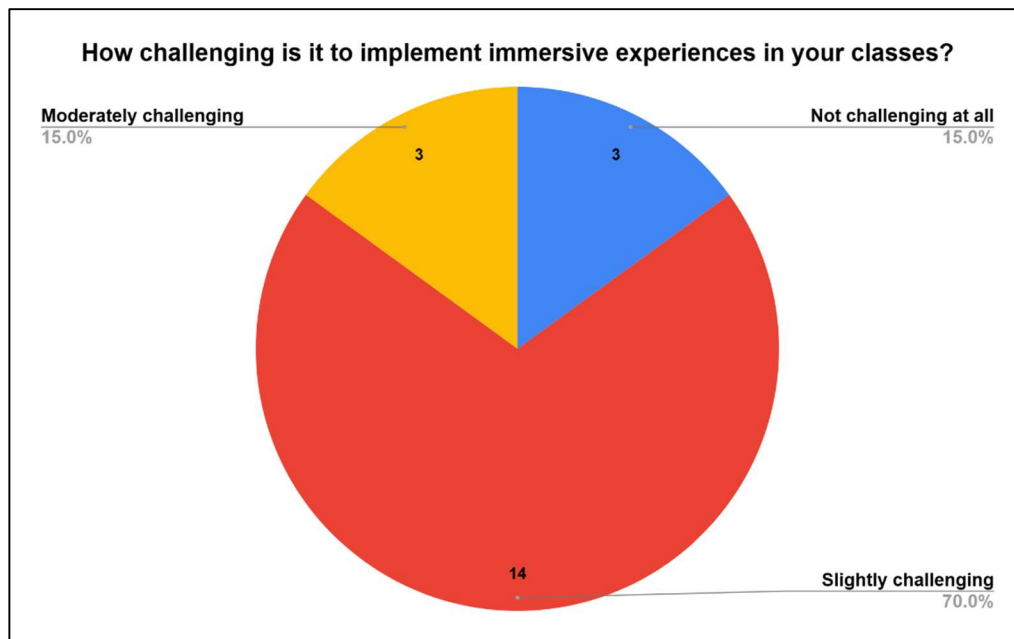


**Figure 7:** To what extent would you agree with the statement: 'I feel confident incorporating ICT into my lessons'.



**Figure 8:** How satisfied are you with the level of training and professional development that teachers are provided with to support the use of ICT for teaching and learning?

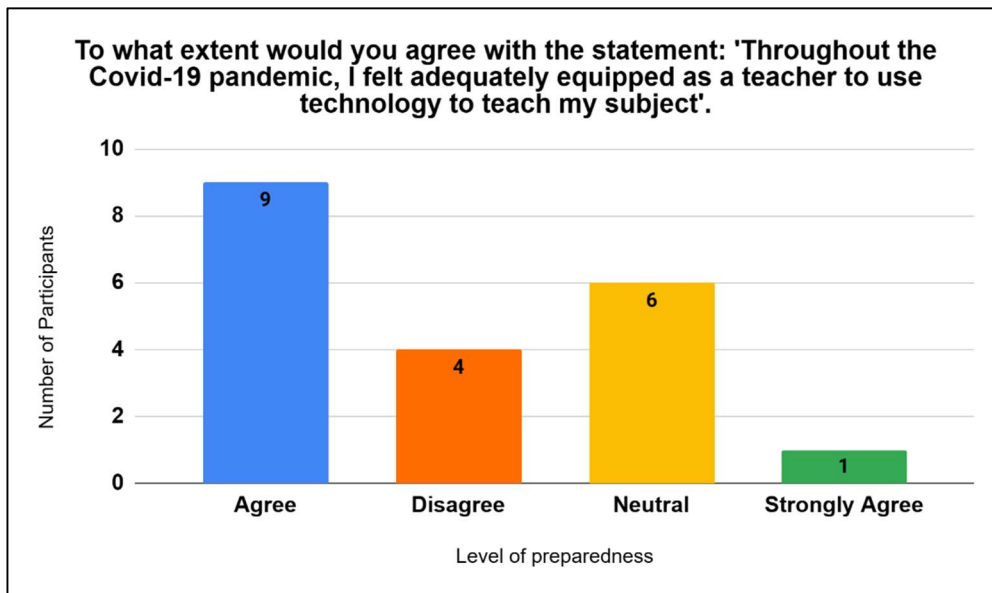
The questionnaires gave a clear indication that teachers do not find implementing immersive experiences and technology in the classroom particularly challenging. No respondent chose the ‘very challenging’ or ‘extremely challenging’ option. 15% (n=3) stated that it was ‘not challenging at all’, 70% (n=14) stated ‘slightly challenging’ and the remaining 15% (n=3) stated ‘moderately challenging’. While 1 respondent of the questionnaire chose to ‘disagree’ with the need for more training, the remaining 19 respondents either ‘strongly agreed’ or ‘agreed’ that more aid was needed (see Figure 9 below).



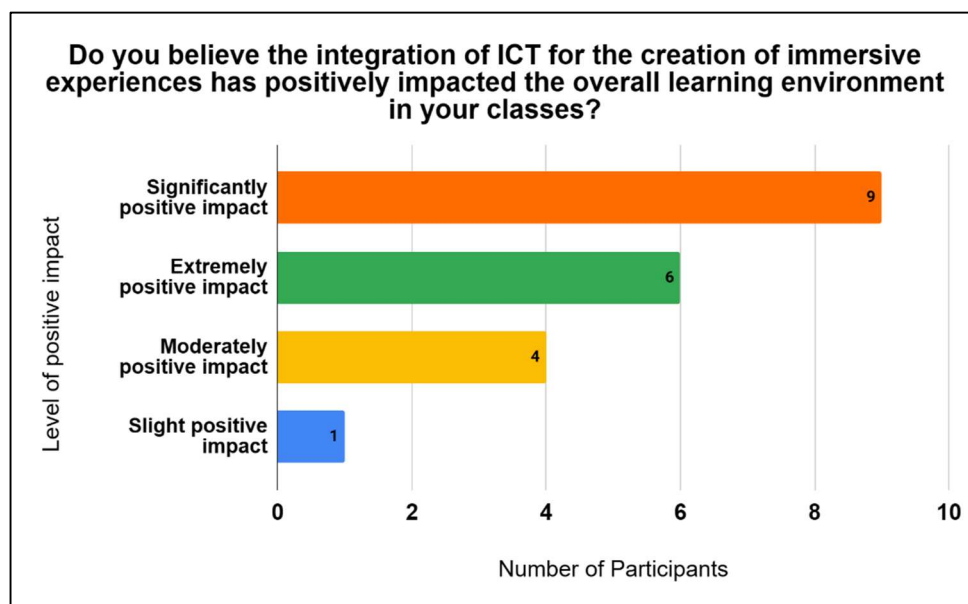
**Figure 9:** How challenging is it to implement immersive experiences in your classes?

It is also worth mentioning the challenge associated with teaching and technology during the Covid-19 pandemic. When asked whether participants agreed that they felt adequately equipped as a teacher to use technology to teach their subject, there were mixed results. Only 5% (n=1) chose to ‘strongly agree’, whereas 45% (n=9) of respondents chose to ‘agree’. 30% (n=6) remained ‘neutral’ while 20% (n=4) chose to ‘disagree’ (see Figure 10 on the next page).

In relation to the overall learning environment in classrooms, the questionnaires revealed that no participants believed that there was ‘no positive impact’. The results revealed that 30% of participants (n=6) believed there was an ‘extremely positive impact’, 45% (n=9) believed there was a ‘significantly positive impact’, 20% (n=4) believed there was a ‘moderately positive impact’ and 5% (n=1) believed there was a ‘slight positive impact’ (see Figure 11 on the next page).



*Figure 10: To what extent would you agree with the statement: 'Throughout the Covid-19 pandemic, I felt adequately equipped as a teacher to use technology to teach my subject'.*



*Figure 11: Do you believe the integration of ICT for the creation of immersive experiences has positively impacted the overall learning environment in your classes?*

### 4.3 Qualitative findings from semi-structured interviews:

Following the questionnaires, two face-to-face interviews were conducted with 2 teachers who did not complete the questionnaires. Details about both interviewees can be seen in Table 1 below. Interviewee 1 was a female Junior Cycle geography teacher with 6 years of experience while interviewee 2 was a male Junior Cycle history teacher with over 16 years of experience.

	Junior Cycle Subject	Male/ Female	Years of experience
Interviewee 1	Geography	Female	6 years
Interviewee 2	History	Male	16 years

*Table 1: Interviewee 1 and interviewee 2 details.*

Three main themes emerged from the qualitative data:

#### 4.3.1 Theme 1: Significance and benefits of ICT

The significance of ICT usage for teaching was highlighted by interviewee 1 and interviewee 2 who stated that they use ICT in ‘every lesson’ and ‘every day’, respectively. Interviewee 1 highly praised the use of ICT, describing it as ‘a fantastic tool’ as it allows teachers to ‘engage all students and enhance their learning experiences’. The interviewee went further stating that ‘you just know by them they are more engaged’ and that integration of ICT into lessons provides the students with ‘a positive learning experience’. Interviewee 2 held a similar view going as far as saying that ICT ‘acts as a virtual classroom’ for the students and enables the teacher to ‘raise their engagement’.

Questions concerning the interviewees perspectives on the main benefits of ICT revealed similar perspectives. Both interviewees placed great emphasis on the role technology is playing in their students' lives outside of school and in society. Interviewee 1 suggests the need to ‘encourage them to learn through technology in class’ in order to ‘meet them at their level’. Interviewee 2 commented on how technology is ‘the world they inhabit’.

Additionally, when questioned about how technology and immersive experiences impacts on the overall learning environment in their classrooms, both interviewees agreed that technology and immersive experiences positively impact the overall learning environment in their classrooms with interviewee 1 stating that it ‘engages all students and enhances their learning experiences’.

### **4.3.2 Theme 2: Immersive learning providing a real-world connection**

The interviews allowed the researcher to gain a greater insight into the use of immersive technology in the classroom. Both interviewees had made use of immersive learning experiences for their subjects in the past, with virtual tours and field trips being a popular choice to demonstrate different topics to their students. Interviewee 2 also found that for the subject of history, immersive experiences can transform time and statistics and in their own words ‘bring the real world into the classroom where possible’.

Additionally, interviewee 2 had a notably keen interest in immersive technologies and is ‘very excited’ about the prospect of future technologies and artificial intelligence (AI) for education. While interviewee 2 does also mention the possibilities that headsets and virtual oculi could have in aiding learning for students, they are also quick to note that this is only possible if ‘further technology’ can be provided to schools.

The two interviewees both confidently stated that ICT and immersive technologies play a large role in visualising the content for their students. Interviewee 1 believes it ‘simplifies’ the content for students when they can see it and immersive learning experiences allows them to do just that for their students. While interviewee 2 also agrees and says that ‘a picture paints a thousand words’. Both recalled their own time spent in school and the lack of technology available to them as students themselves. They recall having ‘no visuals’ in class and that they ‘wish that we had the tools we have now when we were in school’.

Additionally, connecting the curriculum to the real world was particularly evident from both interviews as words like ‘real’ and ‘reality’ were mentioned throughout both interviews. Interviewee 2 mentioned the word ‘real’ five times in relation to technology and immersive learning.

### **4.3.3 Theme 3: Challenges and training**

With regards to teacher confidence in using ICT and immersive technologies in the classroom, both respondents of the interviews felt confident in their ability to incorporate ICT into their lessons. They did however have differing opinions regarding their preparedness during the Covid-19 pandemic and the challenges that surrounded it. Interviewee 1 did not feel equipped, particularly at the start, but did admit that technology is now a tool that they could ‘never imagine not having for school’. Interviewee 2 on the other hand did feel equipped and ‘adequately resourced’ to teach through technology during the pandemic.

When questioned about whether the interviewees had received any training regarding ICT, interviewee 1 revealed that they had not received any training while interviewee 2 had attended workshops and training from the Department of Education and Oide. It is important to note however that interviewee 2 has 10 years additional experience than interviewee 1. It is also worth adding that interviewee 2 is the ICT coordinator in the school and plays a larger role with ICT in the school than interviewee 1. They did however mention the need for more training in ICT for post-primary teachers, as both agree that more needs to be done to better cater for ICT usage in classrooms. Interviewee 1 pointed out that, as teachers, we are ‘always learning’ and that it is important for the students that all teachers are at ‘same level’.

When asked what challenges they have encountered when implementing ICT. Both interviewees mentioned the sheer number of resources and technologies available and the challenge of picking and making use of technology and resources that are ‘relatable’ and ‘relevant’ to the topic being taught. Both stated that it is the responsibility of the teacher to ‘filter information’ to ensure that the technology will ultimately ‘enhance the learning experience for the students’. Issues of reliability of technology and the ‘digital divide’ amongst students were also raised by interviewee 2.

#### **4.4 Conclusion:**

The findings of this research project have been detailed throughout this chapter. The data collected from the online questionnaires and face-to-face interviews revealed that ICT plays a significant role in the Junior Cycle history and geography classes. While the majority of teachers make use of ICT and recognise the benefits of ICT for their students, the use of immersive experiences is adapted but not as common. The following chapter will now discuss these findings in relation to relevant literature and the aims of this research project.

# Chapter 5

## Discussion

### 5.1 Introduction

This chapter will discuss the findings from the quantitative and qualitative data presented in the previous chapter. In order to formulate a comprehensive discussion, the results from the online questionnaires and face-to-face interviews will be explored in relation to existing literature on the topic of ICT and immersive experiences. Discussion will be made in relation to the original research questions:

- Why are teachers using ICT in the classroom to create immersive learning experiences for Junior Cycle geography and history students?
- How effective is ICT as a method of helping Junior Cycle students to visualise, engage with and better understand the subjects of geography and history?
- Do post-primary teachers feel equipped and confident to use ICT when teaching Junior Cycle geography and history?

### 5.2 Teachers use of ICT to create immersive learning experiences

In order to explore why teachers are using ICT in the classroom to create immersive experiences for their students, it was necessary to firstly uncover the number of teachers utilising immersive experiences. Very little research has focused on the number of teachers who are actively incorporating immersive learning experiences into their lessons in post primary schools here in Ireland. While this research project revealed that almost all participants were aware of the term immersive learning, teachers were not as likely to incorporate immersive experiences into their lessons as opposed to regular day-to-day ICT. As Molloy and Farrell (2024) have highlighted, immersive technologies in schools around Ireland are a relatively recent phenomenon. This relatively recent emergence of immersive technologies could explain why teachers are less likely to incorporate them into their lessons compared to day-to-day ICT.

According to the two interviewees, immersive experiences that were commonly adapted centred around virtual resources or interactive simulations available online. While interviewee 2 did mention the possibilities that headsets and virtual oculi could potentially provide for students, they also importantly mentioned the need for more funding initiatives to facilitate more interactive technologies in schools. The recent announcement of €50 million

in funding for ICT in primary and post-primary schools around Ireland by the current Minister Norma Foley will likely provide much welcomed improvements to technology going forward (DES, 2024). It could be argued that this funding and the possibility of more access to interactive and immersive technologies available in post-primary schools around Ireland might encourage teachers to utilise them more.

However, the data collected from those who do incorporate immersive experiences did reveal the benefits that immersive technologies are providing to students. Most notably, both the quantitative and qualitative data revealed that immersive experiences and technologies allow students to connect what they have learned in class to the real world. Apart from one participant, all other participants of the interviews and questionnaires believed that ICT provides a real-world connection for students. Furthermore, one of the themes that arose from the interviews was the real-world possibilities of immersive learning. Fernandes et al. (2022) agrees with these findings, arguing that technology allows the content to become real for the students and acts as a way of bringing the real world into the classroom.

More recently, others have noted the benefits of generating these real worlds connections for students with noticeable changes in student retention and understanding (Buragohain et al., 2024). Reflecting on the original research question regarding why teachers are using immersive experiences, they are doing so to encourage the students to make connections between what they learn in the classroom with reality. Ultimately, while teachers are not as likely to incorporate immersive experiences into their lessons in comparison to standard ICT, those who are using immersive experiences are doing so to create content that is as life like and real as possible for their students to comprehend.

### **5.3 The effectiveness of ICT to help visualise, engage with and understand the subjects of geography and history**

The quantitative and qualitative data provided great insight into the many benefits that ICT effectively provides to students. Indeed, one of the three themes that emerged from the thematic analysis of the interviews was the significance and benefits of ICT. The data reveals that ICT has proven to be highly effective in helping Junior Cycle students to visualise, engage with, and better understand complex geographical and historical concepts.

#### **5.3.1 Visualisation:**

All respondents of the questionnaires agreed that ICT aids the visualisation of their subject. The interviews conducted allowed the researcher to gain a deeper understanding about how

ICT visualises the learning for the students. Both interviewees gave subject specific examples of how certain areas of the curriculum can be visualised to aid student learning. For example, in history, ICT can help to reimagine life in Ancient Rome or life during the Irish Famine. Similarly, in geography, ICT can visualise the formation of a volcano or a river feature.

Kuzembayeva et al. states that 87% of students are visual learners and instead of simply reading and hearing the information, ICT can enable students to "experience" what they are learning (Kuzembayeva et al., 2022, p.83). Visual learning is greatly enhanced using technology and immersive experiences in the classroom. It was also noted from the interviews that using ICT to visualise content was particularly useful for the two subjects of geography and history. According to research, Haydn (2013) has studied how ICT can visualise and understand historical content. Similarly, Shapiro and Garner (2022) have highlighted how the use of ICT can visualise geographical space and time for students. Ultimately, the data collected can confirm that teachers strongly believe that ICT is very effective in helping students to visualise their subjects.

### **5.3.2 Engagement:**

The data collected in this study also indicated that ICT engages students. 90% of respondents (n=18) either strongly agreed or agreed that ICT positively impacts student engagement. 10% (n=2) either disagreed or remained neutral. Both participants of the interviews agreed that ICT engages students. These results correlate with William et al. (2021) who emphasised how immersive experiences can not only promote collaboration amongst students but also improve student engagement. Similarly, Kuhail et al. (2022) too explored the ability ICT has on improving engagement levels in the classroom. Perhaps the minority of respondents who disagreed that ICT has an impact on engagement levels believed that ICT can perhaps be distracting for students, overstimulating and instead promote disengagement. This argument can be supported by Carrier et al. (2015) who discusses how ICT-related distractions can have a negative impact on student engagement and attention in class. With this in mind, it is worth reiterating the opinion of interviewee 1, who said that it is important to only utilise resources that will be of benefit to the students and to be mindful of the correct time to incorporate ICT into the lesson in order to gain optimal engagement levels from students.

It is also worth mentioning that ICT has also allowed students and teachers to engage with each other, through Microsoft Teams and emails. Technology has allowed for better communications between students and teachers in Irish post-primary schools which continues

to benefit and advance school communities today (Marcus-Quinn and Hourigan, 2022). The findings from the interviews support this, with both interviewees stating that it provides an open dialogue between the teacher and their students regarding classwork, homework, and general subject related queries. It could be argued however that there is too much communication and engagement between students and teachers and that any communication should be confined within the school. These concerns about communication between teachers and students outside of the classroom were raised by Thomson (2010) who believes that technology can blur the boundaries between school and home.

### **5.3.3 Improved Understanding:**

Additionally, the data revealed that ICT can aid understanding of topics for students. The benefits of ICT have been recognised by Ghavifekr and Rosdy (2015) who have studied the effectiveness of ICT in schools and have discussed the advantage it has on improving understanding and overall comprehension of certain topics. The results from this research align with Ghavifekr and Rosdy's findings. All respondents of this study agreed that ICT aids overall comprehension and understanding of their subject. Taking a closer look at how ICT helps students understand certain areas of the curriculum, the teachers who were interviewed recognised the importance of ICT for all students, but particularly Special Educational Needs (SEN) students. SEN refers to learning difficulties or disabilities that make it more challenging for students to learn compared to other students of the same age (DES, 2020). Both interviewees from this research spoke about how ICT simplifies content for these students. Studies have shown the benefits technology has on overall comprehension for students with autism (Odom et al., 2015), the role ICT plays for students with visual impairments (Tuttle and Carter, 2022) and using ICT to aid understanding for students with hearing impairments (Miller, 2015). It is clear from the literature that ICT offers students with disabilities the opportunity to comprehend content. It could be argued however that there has been minimal research done regarding the negatives of ICT for students with disabilities. Perhaps a deeper insight into the most suitable technologies for students with disabilities is required.

It is also worth noting that while the data revealed only minor challenges associated with ICT, all teachers were confident that immersive experiences positively impact the overall learning environment for students. While researchers like Petko et al. (2016) and Gorjón and Osés (2022) have focused on the negative impacts ICT can have for students, the results of this

research project align with researchers like Tripathi and Prasad (2022) who have studied the positives that ICT can have for students.

## **5.4 Post-primary teachers' preparedness and confidence using ICT when teaching Junior Cycle geography and history**

### **5.4.1 Confidence:**

When asked whether respondents agreed with the statement about feeling confident incorporating ICT into their lessons, the data collected revealed that no respondents expressed disagreement or strong disagreement. McCoy et al. (2016) regards a teacher's ability and confidence in using ICT as one of the main enablers for technological development within a school. The high percentage of respondents who expressed confidence in incorporating ICT into their lessons suggests a positive attitude toward technology integration within this school as well as recognition of the benefits of ICT for enhancing teaching and learning experiences.

### **5.4.2 Covid-19:**

With regards to the Covid-19 pandemic, the general consensus from those who participated in the interviews and questionnaires revealed that the majority of teachers did not feel entirely prepared to teach using ICT during the pandemic. As outlined in the literature review in Chapter 2, there has been very little research carried out in an Irish context on teacher preparedness for Covid-19. Not only does this suggest a lack of understanding regarding the challenges faced by teachers in Ireland during the pandemic but it also highlights a missed opportunity for improvements to ICT in education going forward.

While some teachers do feel that technology is now a resource that they feel comfortable using and could not imagine not having in their classrooms, more comprehensive research is still needed to identify areas that need improvements. The importance of research is highlighted by Kennedy (2016), who believes that research is vitally important in identifying the need for more training for teachers to effectively identify areas of improvements and advance development. The researcher concludes that more research is needed for the possibility of any improvements to ICT in post-primary schools around Ireland to occur.

### **5.4.3 Training:**

In relation to training in ICT for post-primary teachers, the data from the quantitative research revealed a clear need for more training in ICT, with all but one participant of the questionnaires agreeing that more training in ICT was needed for post-primary teachers in

Ireland. This need was also evident from the interviews as one of the themes identified from the thematic analysis of both interviews was challenges and training associated with ICT.

Regarding research into the level of training being provided to post-primary teachers in Ireland, very little exists. Although the DES's Digital Strategy for Schools to 2027 builds upon the department's previous strategy enacted in 2015 and does provide support services and resources to teachers, there is no mention of training initiatives to aid teachers (DES, 2022). The lack of training and guidance being provided to teachers hinders the ability for any form of improvement in ICT usage. It is evident from this research study that not only is more training needed but also more research is required to fully understand the areas and subjects in need of improvements. Perhaps compulsory training in ICT or regular annual or biannual training is needed at post-primary level.

#### **5.4.4 Lack of guidance:**

This in turn leads one to question why there is still no framework in place for ICT integration in post-primary schools around Ireland. While some might argue that it is a positive thing that schools are given so much autonomy and freedom with regards to ICT integration, interviewee 2 disagrees stating that the lack of a clear framework leads to a lack of coherence and only creates a digital divide within schools. Marcus-Quinn and Hourigan (2022) agree with this and suggest the creation of a standard to help teachers guide and navigate digital technologies in the classroom. The researcher believes that this, at the very least, would provide reassurance and guidance to post-primary teachers using ICT around Ireland.

#### **5.5 Conclusion:**

This chapter discussed the main findings from the quantitative and qualitative data collected for this research project. Discussion was made in relation to the three original research questions, incorporating recent literature to corroborate results. Key insights from both the questionnaires and interviews were integrated to provide a comprehensive understanding of ICT use and immersive experiences in the classroom. The next chapter, Chapter 6, will now consider the strengths and limitations of this research project. It will also offer recommendations by identifying areas where further investigation could yield valuable insights for future research and future practice.

# Chapter 6

## Conclusion

### 6.1 Introduction

This small-scale mixed methods study allowed the researcher to gain a greater understanding of ICT and immersive experiences in the Junior Cycle geography and history classroom. The existing literature surrounding ICT and immersive experiences in the classroom were explored in Chapter 2. The results from the quantitative and qualitative data were analysed and presented before discussion was made in relation to the relevant literature and original research questions of this project.

### 6.2 Summary of Findings

The data revealed that almost all teachers make use of ICT in their classrooms when teaching their subjects, with a significant number of participants revealing that they find it easier to teach with the use of ICT. Teachers recognised the benefits of ICT for their students, from visualisation, increased engagement, and improvements to overall comprehension. The data also revealed that while teachers are aware of the term immersive learning, less teachers are inclined to incorporate immersive experiences into their lessons as opposed to standard day-to-day ICT. The findings reveal that immersive learning enables students to connect what they have learned to the real world and offers a more realistic interpretation of the content. While teachers who participated felt confident using ICT in their lessons, the consensus amongst post-primary teachers is that more training is needed for teachers to adequately incorporate ICT into the classroom and in turn to be able to provide students with immersive experiences through technology.

### 6.3 Limitations

Upon analysing the data, the researcher identified limitations in the study, notably the small sample size. To obtain a more accurate representation of ICT use among post-primary teachers in Ireland, a larger sample size is needed. Larger samples provide more representative results and enhance the reliability of findings (Cohen, Manion, and Morrison, 2011). This study only included geography and history teachers and therefore did not include teachers teaching other Junior Cycle subjects. Purposive sampling was also used, which does not allow for a broad representation of geography and history teachers as it is not a random sample (Bazeley, 2018). Additionally, as the researcher was known to the participants, the possibility of bias is also likely. Participants may have altered their responses or behaviour

because they were familiar with the researcher. They might have provided answers they believed the researcher wants to hear or avoid giving negative feedback, thus skewing the data (Wyse, Selwyn and Smith, 2017).

## **6.4 Recommendations**

### **6.4.1 Recommendations for future practice**

Considering the findings, the researcher recommends that more support and training in ICT is required for post-primary teachers. The researcher proposes compulsory training in ICT or regular annual or biannual training at post-primary level which would be worthwhile and beneficial for teachers. According to research, for teachers to successfully integrate technology, they must receive training (Hepp, Prats Fernandez, and Holgado García, 2015). Agreeing with Marcus-Quinn and Hourigan (2022), the researcher suggests the creation of a standard to help teachers guide and navigate digital technologies in the classroom. The researcher believes that this, at the very least, would provide reassurance and guidance to post-primary teachers using ICT around Ireland.

### **6.4.2 Recommendations for future research**

It is evident from this research study that not only is more training needed but also more research is required to fully understand the areas and subjects in need of improvement. As this study was limited to one school, the researcher believes a larger sample would enhance the reliability and credibility of this study. Future research could include a larger sample size to increase the accuracy of the findings and could also include a more diverse sample of teachers to fully understand the use of ICT across all Junior Cycle subjects. Unlike this study, future research could conduct questionnaires and interviews with participants not known to the researcher. The researcher believes this would perhaps give a more valid insight into ICT use and the use of immersive experiences in geography and history classes around Ireland.

## **6.5 Conclusion**

This small-scale study has provided insight into the use of ICT in Junior Cycle geography and history classes. Through the exploration of post-primary teachers' experiences of using ICT in the classroom, education, like society, is adapting to the ever-growing presence of technology. The emergence of immersive experiences delivered through technology, while not fully implemented in schools, can provide benefits like increased engagement and improved comprehension. The findings reveal the need, now more than ever, for more

training in ICT for post-primary teachers to effectively engage in ICT and create immersive experiences for the Junior Cycle subjects of geography and history.

## References

- Ahmadi, S., Keshavarzi, A. and Foroutan, M. (2011) 'The application of Information and Communication Technologies (ICT) and its relationship with improvement in teaching and learning', *Procedia - Social and Behavioral Sciences*, 28, pp.475–480. doi: <http://dx.doi.org/10.1016/j.sbspro.2011.11.091>
- Akçayır, M. and Akçayır, G. (2017) 'Advantages and challenges associated with augmented reality for education: A systematic review of the literature', *Educational Research Review*, 20, pp.1-11. doi: <https://doi.org/10.1016/j.edurev.2016.11.002>
- Alimyar, Z and Lakshmi, S. (2021) 'A study on language teachers' preparedness to use technology during COVID-19', *Cogent Arts and Humanities*, 8(1), pp.1-9. doi: <https://doi.org/10.1080/23311983.2021.1999064>
- Azzolini, D. and Schizzerotto, A. (2017) 'The second digital divide in Europe. A crossnational study on students' digital reading and navigation skills', *Research Institute for the Evaluation of Public Policies*, pp.1-17. [Online] Available at: <https://irvapp.fbk.eu/wp-content/uploads/2017/09/FBK-IRVAPP-Working-Paper-No.-2017-02.pdf> (Accessed 15 July 2023).
- Babione, C. (2015) *Practitioner teacher inquiry and research*. San Francisco, CA: Jossey-Bass.
- Baytak, A. and Hirca, N. (2013) 'Prospective Teachers' Lived Experience on Computer-based Instructional Materials: A Phenomenological Study', *The Anthropologist*, 16(1), pp.97-109. doi: <https://doi.org/10.1080/09720073.2013.11891339>
- Bazeley, P. (2018). *Qualitative data analysis: Practical strategies*. London: Sage Publications.
- Bell, J. and Waters, S. (2014) *Doing your research project: A guide for First-time researchers*. 6th edn. Maidenhead, Berkshire: McGraw-Hill Education.
- Bergman, M.M. (ed.) (2008) *Advances in Mixed Methods Research*. London: Sage Publications.
- Blaxter, L., Hughes, C. and Tight, M. (2010) *How to research*. 4th edn. Maidenhead: Open University Press.
- Braun, V. and Clarke, V. (2012) 'Thematic analysis', in Cooper, H. (ed) *The Handbook of Research Methods in Psychology*. Washington, DC: American Psychological Association, pp. 57–71.
- 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: <https://doi.org/10.1080/03323315.2021.1917444>
- British Educational Research Association (BERA) (2011) *Ethical guidelines for educational research*. London: BERA.

- Buragohain, D., Deng, C., Sharma, A. and Chaudhary, A. (2024) 'The Impact of Immersive Learning on Teacher Effectiveness: A Systematic Study', *IEEE Access*, 12, pp. 35924-35933, 2024, doi: <https://doi.org/10.1109/ACCESS.2024.3373541>
- Carrier, L. M., Rosen, L. D., Cheever, N. A., and Lim, A. F. (2015) 'Causes, effects, and practicalities of everyday multitasking', *Developmental Review*, 35, pp. 64-78. doi: <https://doi.org/10.1016/j.dr.2014.12.005>
- Chaffer, L. (2020) 'Spatial Technologies Inside and Outside Your Geography Classroom', *Geography Bulletin*, 52(1), pp. 54-57. [Online] Available at: <https://eds.p.ebscohost.com/eds/pdfviewer/pdfviewer?vid=5&sid=a1c3a300-baf6-4841-945a-ea222904b313%40redis> (Accessed: 11 July 2023).
- Cohen, L., Manion, L. and Morrison, K. (2011) *Research methods in education*. 7th edn. New York: Routledge.
- Conway, P., Murphy, R., Rath, A., and Hall, K. (2009) 'Learning to teach and its implications for the continuum of teacher education: A nine-country cross-national study', *Teaching Council Ireland*. [Online] Available at: [learning-to-teach-and-its-implications-for-the-continuum-of-teacher-education.pdf](https://www.teachingcouncil.ie/sites/default/files/learning-to-teach-and-its-implications-for-the-continuum-of-teacher-education.pdf) (teachingcouncil.ie) (Accessed: 9 June 2024).
- Creswell, J.W. (2015) *A concise introduction to mixed methods research*. Los Angeles: SAGE.
- Creswell, J. W., and Plano Clark, V. L. (2018) *Designing and Conducting Mixed Methods Research*. 3rd edn. Los Angeles: Sage Publications.
- Dawadi, S., Shrestha, S. and Giri, R.A. (2021) 'Mixed-methods research: A discussion on its types, challenges, and criticisms', *Journal of Practical Studies in Education*, 2(2), pp. 25–36. doi: <https://doi.org/10.46809/jpse.v2i2.20>
- Dengel, A. (2022) 'What Is Immersive Learning?', *Immersive Learning Research Network (iLRN)*, pp.1-5. doi: <https://doi.org/10.23919/iLRN55037.2022.9815941>
- Department of Education and Science (DES) (2008) *ICT in Schools Inspectorate Evaluation Studies*. [Online] Available at: <https://www.gov.ie/pdf/?file=https://assets.gov.ie/25341/e8f06243628548008512ec38516d7ad8.pdf#page=null> (Accessed: 27 June 2023).
- Department of Education and Skills (DES) (2015) *Digital Strategy for Schools 2015-2020 Enhancing teaching, learning and assessment*. [Online] Available at: <https://www.gov.ie/pdf/?file=https://assets.gov.ie/25151/52d007db333c42f4a6ad542b5acca53a.pdf#page=null> (Accessed: 27 June 2023).
- Department of Education and Skills (DES) (2017) *Digital learning framework for post-primary schools*. [Online] Available at: <https://www.dlplanning.ie/wp-content/uploads/2018/10/Domain1-TL.pdf> (Accessed: 21 June 2023)
- Department of Education and Skills (DES) (2020) *Supporting Pupils and Students with Special Educational Needs - Guidelines for Schools*. [Online] Available at: [www.gov.ie/pdf/?file=https://assets.gov.ie/86912/18cab177-e903-44da-8648-fdfe1cf59f02.pdf#page=null](https://www.gov.ie/pdf/?file=https://assets.gov.ie/86912/18cab177-e903-44da-8648-fdfe1cf59f02.pdf#page=null) (Accessed: 02 May 2024)
- Department of Education and Skills (DES) (2022) *Digital Strategy for Schools to 2027*. [Online] Available at:

<https://www.gov.ie/pdf?file=https://assets.gov.ie/221285/6fc98405-d345-41a3-a770-c97e1a4479d3.pdf#page=null> (Accessed: 13 July 2023).

- Department of Education and Science (DES) (2024) *Press release: Minister Foley announces €79 million in funding for primary, post-primary and special schools*. [Online] Available at: <https://www.gov.ie/en/press-release/b33bb-minister-foley-announces-79-million-in-funding-for-primary-post-primary-and-special-schools/> (Accessed: 21 May 2024).
- Feerick, E, Clerkin, A. and Cosgrove, J. (2022) 'Teachers' understanding of the concept of 'embedding' digital technology in education', *Irish Educational Studies*, 41(1), pp.27-39. doi: <https://doi.org/10.1080/03323315.2021.2022521>
- Feilzer, M.Y. (2010) 'Doing mixed methods research pragmatically: Implications for the rediscovery of pragmatism as a research paradigm', *Journal of Mixed Methods Research*, 4(1), pp.6–16. doi: <https://doi.org/10.1177/1558689809349691>
- Fernandes, F.A., Rodrigues, C.S.C., Teixeira, E.N. and Werner, C. (2022) 'Immersive Learning Frameworks: A Systematic Literature Review', *Computer Science*, pp. 1-12. [Online] Available at: <http://arxiv.org/abs/2208.14179> (Accessed: 13 August 2023).
- Firth, J. (2020) *The teacher's guide to research: Engaging with, applying and conducting research in the classroom*. New York: Routledge.
- Ghavifekr, S. and Rosdy, W.A.W. (2015) 'Teaching and learning with technology: Effectiveness of ICT integration in schools', *International Journal of Research in Education and Science (IJRES)*, 1(2), pp.175-191. doi: <https://doi.org/10.21890/ijres.23596>
- Gorjón, L. and Osés, A. (2022) 'The Negative Impact of Information and Communication Technologies Overuse on Student Performance: Evidence From OECD Countries', *Journal of Educational Computing Research*, 61(4), pp. 723–765. doi: <https://doi.org/10.1177/07356331221133408>
- Graham, M. (2017) 'Digitally Augmented Geographies', in Kitchin, R., Lauriault, T. P., and Wilson, M. W. (eds.) *Understanding Spatial Media*. London: Sage, pp. 44-55.
- Gu, X., Wu, B. and Xu, X. (2015) 'Design, development, and learning in e-Textbooks: what we learned and where we are going', *Journal of computers in education*, 2(1), pp.25-41. doi: <https://doi.org/10.1007/s40692-014-0023-9>
- Haydn, T. (2013) *Using new technologies to enhance teaching and learning in history*. London: Routledge.
- Hepp, P.K., Prats Fernández, M.À. and Holgado García, J. (2015) 'Teacher training: technology helping to develop an innovative and reflective professional profile', *RUSC: Revista de Universidad y Sociedad del Conocimiento*, 12(2), pp. 30–43. doi: <https://doi.org/10.7238/rusc.v12i2.2458>
- Horany, H. (2022) 'Managing the implementation in schools of ICT and its influence on the performance of school students', *The Annals of the University of Oradea. Economic Sciences*, 31(1), pp.414–424. doi: [http://dx.doi.org/10.47535/1991auoes31\(1\)039](http://dx.doi.org/10.47535/1991auoes31(1)039)

- Kennedy, M.M. (2016) ‘How does professional development improve teaching?’, *Review of Educational Research*, 86(4), pp. 945–980. doi: <https://doi.org/10.3102/0034654315626800>
- Kilcoyne, A. (2021) ‘Living and learning with Covid-19: re-imagining the digital strategy for schools in Ireland’, *Irish Educational Studies*, 40(2), pp. 247–253. doi: <https://doi.org/10.1080/03323315.2021.1915839>
- Kuada, J. (2012) *Research methodology: A Project Guide for University students*. Frederiksberg, Denmark: Samfundslitteratur.
- Kuhail, M.A., ElSayary, A., Farooq, S. and Alghamdi, A. (2022) ‘Exploring Immersive Learning Experiences: A Survey’, *Informatics*, 9(4), pp.1-32. doi: <https://doi.org/10.3390/informatics9040075>
- Kuzembayeva, G., Taganova, A.M., Spulber, D. and Maydangalieva, Z. (2022) ‘Teachers’ Perspectives on Using Information and Communication Technology in the Secondary School Practice: A Case Study’, *Journal of Social Studies Education Research*, 13(3), pp. 79–97. [Online] Available at: <https://research.ebsco.com/linkprocessor/plink?id=d0af3848-c064-30ac-a611-c9d97ca474ff> (Accessed: 13 May 2024).
- Leissau, M., Hellbach, S. and Laroque, C. (2021) ‘Self-Paced Learning in Virtual Worlds: Opportunities of an Immersive Learning Environment’, *Proceedings of the European Conference on e-Learning*, 9, pp. 257-265. doi: <https://doi.org/10.34190/EEL.21.053>
- Marcus-Quinn, A. and Hourigan, T. (2022) ‘Digital inclusion and accessibility considerations in digital teaching and learning materials for the second-level classroom’, *Irish Educational Studies*, 41(1), pp.161-169. doi: <https://doi.org/10.1080/03323315.2021.2022519>
- Marcus-Quinn, A., Hourigan, T. and McCoy, S. (2019) ‘The Digital Learning Movement: How Should Irish Schools Respond?’, *The Economic and Social Review*, 50(4), pp 767-783. [Online] Available at: <https://eds.p.ebscohost.com/eds/pdfviewer/pdfviewer?vid=5&sid=1c2079d2-9541-4c76-b451-8e40c5118530%40redis> (Accessed: 22 June 2023).
- McAteer, S., O’Keefe, L., McKeown, C., Shiel, G. and Cosgrove, J. (2021) ‘Students’ Access to Technology, Attitudes to ICT, and Their Performance on PISA 2015 Science in Ireland’, *The Irish Journal of Education*, 44, pp.1-31. [Online] Available at: <https://www.jstor.org/stable/27099681> (Accessed at: 13 July 2023).
- McCarney, R., Warner, J., Iliffe, S., van Haselen, R., Griffin, M. and Fisher, P. (2007) ‘The Hawthorne Effect: a randomised, controlled trial’, *BMC Medical Research Methodology*, 7, pp. 30–8. doi: <https://doi.org/10.1186/1471-2288-7-30>
- McCoy, S., Lyons, S., Coyne, B. and Darmody, M. (2016) *Teaching and Learning in Second-Level Schools at the Advent of High-Speed Broadband*. [Online] Available at: <https://www.esri.ie/system/files/publications/RS51.pdf> (Accessed: 22 June 2023).
- McGarr, O and McDonagh, A. (2013) ‘Examining the role of the ICT coordinator in Irish post-primary schools’, *Technology, Pedagogy and Education*, 22(2), pp.267-282. doi: <http://dx.doi.org/10.1080/1475939X.2012.755132>

- McInerney, J., Seedhouse, D., Pettit, M., Roberts, S., Druva, R. and Lewicki, S. (2022) 'Interdisciplinary interprofessional education using an online learning environment called values exchange: A qualitative investigation', *Journal of Medical Radiation Science*, 69(3), pp.309-317. doi: <https://doi.org/10.1002/jmrs.584>
- Miller, K. (2015) 'A Whole New World: Technology and Its Impact on Students Who Are Deaf or Hard-of-Hearing', *Themes in Science and Technology Education*, 8(1), pp.5-16. [Online] Available at: <https://eds.s.ebscohost.com/eds/pdfviewer/pdfviewer?vid=35&sid=e23c8907-b829-4a25-a641-c9b80a66a91b%40redis> (Accessed: 16 July 2023)
- Molloy, C. and Farrell, R. (2024) 'Cultivating Positive Classroom Environments: Exploring the Efficacy of Immersive Technologies in Removing Barriers to Learning Among Primary School Students', *Computers in the Schools*, 41(2), pp.164–192. doi: <https://doi.org/10.1080/07380569.2024.2325441>
- Morgan, D.L. (2007) 'Paradigms lost and pragmatism regained: Methodological implications of combining qualitative and quantitative methods', *Journal of Mixed Methods Research*, 1(1), pp.48–76. doi: <https://doi.org/10.1177/2345678906292462>
- Niu, T., Li, Z., Huang, M. and Yuan, Li. (2023) 'The Application of Virtual Reality Technology in Geography Teaching', *Proceedings of the 2nd International Conference on Education, Language and Art*, 730, pp.12–20. doi: [https://doi.org/10.2991/978-2-38476-004-6\\_3](https://doi.org/10.2991/978-2-38476-004-6_3)
- Odom, S.L., Thompson, J. L., Hedges, S., Boyd, B.A., Dykstra, J.R., Duda, M.A., Szidon, K.L., Smith, L.E. and Bord, A. (2014) 'Technology-aided interventions and instruction for adolescents with autism spectrum disorder', *Journal of Autism and Developmental Disorders*, 45(12), pp.3805–3819. doi: <http://dx.doi.org/10.1007/s10803-014-2320-6>
- Organisation for Economic Cooperation and Development (OECD) (2015) *Students, computers and learning: Making the connection*. [Online]. Available at: <https://doi.org/10.1787/9789264239555-en> (Accessed: 11 July 2023)
- Organisation for Economic Cooperation and Development (OECD) (2018) *How has Internet use changed between 2012 and 2015?* [Online] Available at: <https://doi.org/10.1787/1e912a10-en> (Accessed: 11 July 2023).
- Petko, D., Cantieni, A. and Prasse, D. (2016) 'Perceived quality of educational technology matters', *Journal of Educational Computing Research*, 54(8), pp.1070–1091. doi: <https://doi.org/10.1177/0735633116649373>
- Pickard, A.J. (2013) *Research methods in information*. 2nd edn. London: Facet.
- Plano Clark, V.L. and Ivankova, N.V. (2016) *Mixed methods research. A guide to the field*. London: Sage Publication.
- Raiyn, J. (2016) 'The Role of Visual Learning in Improving Students' High-Order Thinking Skills', *Journal of Education and Practice*, 7(24), pp.115–121. [Online] Available at: <https://research.ebsco.com/linkprocessor/plink?id=3eb4b6e3-99e3-39fd-8179-98c272eed9b> (Accessed: 13 May 2024).

- Schuwer, R., Kreijns, K. and Vermeulen, M. (2014) 'Wikiwijs: An unexpected journey and the lessons learned towards OER', *Open Praxis*, 6(2), pp.91-102. doi: <https://doi.org/10.5944/openpraxis.6.2.116>
- Schrauf, R.W. (2016) *Mixed methods: Interviews, surveys, and cross-cultural comparisons*. Cambridge: Cambridge University Press.
- Shapiro, B.R. and Garner, B. (2022) 'Classroom interaction geography: visualizing space and time in classroom interaction', *Journal of Research on Technology in Education*, 54(5), pp.769-783. doi: <https://doi.org/10.1080/15391523.2021.1927265>
- Simkin, M. (2018) 'Embedding Technology in the History Classroom', *Agora*, 53(1), pp.17-20. [Online] Available at: <https://eds.s.ebscohost.com/eds/pdfviewer/pdfviewer?vid=2&sid=9394e4b6-e798-467b-ae78-c01edfa22070%40redis> (Accessed: 13 July 2023)
- Taherdoost, H. (2022) 'What are different research approaches? Comprehensive Review of Qualitative, quantitative, and mixed method research, their applications, types, and limitations', *Journal of Management Science and Engineering Research*, 5(1), pp.53-63. doi: <https://doi.org/10.30564/jmser.v5i1.4538>
- Thomson, D. L. (2010) 'Beyond the Classroom Walls: Teachers' and Students' Perspectives on How Online Learning Can Meet the Needs of Gifted Students', *Journal of Advanced Academics*, 21(4), pp.662-712. doi: <https://doi.org/10.1177/1932202X1002100405>
- Tripathi, N. and Prasad, C. (2022) 'How ICT Colossally Influenced the Education System', *Special Education*, 1(43), pp.3489-3497. [Online] Available at: <https://eds.s.ebscohost.com/eds/pdfviewer/pdfviewer?vid=3&sid=84726b2c-e51a-435a-9a99-c7bdc4ea4ed7%40redis> (Accessed: 13 July 2023)
- Tuttle, M. and Carter, E.W. (2022) 'Examining High-Tech Assistive Technology Use of Students With Visual Impairments', *Journal of Visual Impairment and Blindness*, 116(4), pp.473-484. Doi: <https://www.doi.org/10.1177/0145482X221120265>
- Vermeulen, M., Kreijns, K., van Buuren, H. and Van Acker, F. (2017) 'The Role of Transformative Leadership, ICT-Infrastructure and Learning Climate in Teachers' Use of Digital Learning Materials during Their Classes', *British Journal of Educational Technology*, 48(6), pp.1427-1440. [Online] Available at: <https://research.ebsco.com/linkprocessor/plink?id=0306b265-cb27-329d-ab8c-01ee9019cdaa> (Accessed: 17 May 2024).
- Williams, S., Enatsky, R., Gillcash, H., Murphy, J.J. and Gracanin, D. (2021) 'Immersive Technology in the Public School Classroom: When a Class Meets', *Immersive Learning Research Network*, pp.1-8. doi: <https://doi.org/10.23919/iLRN52045.2021.9459371>
- Winter, E., Costello, A., O'Brien, M. and Hickey, G. (2021) 'Teachers' use of technology and the impact of Covid-19', *Irish Educational Studies*, 40(2), pp.235-246. doi: <https://doi.org/10.1080/03323315.2021.1916559>
- Wisdom, J. and Creswell, J. W. (2013) *Mixed Methods: Integrating Quantitative and Qualitative Data Collection and Analysis While Studying Patient-Centered Medical Home Models*. [Online] Available at:

<https://www.ahrq.gov/sites/default/files/wysiwyg/ncepcr/tools/PCMH/mixed-methods.pdf> (Accessed: 6 September 2023).

Wojdon, J. (ed.) (2016) *E-teaching History*. Newcastle upon Tyne : Cambridge Scholars Publishing

Wyse, D., Selwyn, N. and Smith, E. (2017) *The BERA/SAGE Handbook of Educational Research*. London: SAGE Publications Ltd. [Online] Available at: <https://research.ebsco.com/linkprocessor/plink?id=657728d8-beeb-313e-82b1-3a648e140ce7> (Accessed: 17 May 2024).

# Appendices

## Appendix A – Online Questionnaire

### Teacher Questionnaire

Using ICT to create an immersive experience for students: A study of the post-primary Junior Cycle geography and history classrooms.

This survey should take approximately 5 minutes to complete.

Thank you for taking the time to participate.

#### **About this study:**

ICT stands for Information and Communication Technology. Technology can be used in the classroom in a number of ways. This questionnaire is designed to evaluate how teachers are using ICT in the classroom to create immersive learning experiences for Junior Cycle geography and history students.

Immersive learning refers to a teaching and learning approach whereby students are provided with the opportunity to visualise what they are learning, to connect with the real world and interact with their learning through technology. Examples of immersive experiences include interactive mapping, 360° images, virtual tours, virtual field trips.

**Please read each question carefully and provide honest responses.**

Thank you.

1. Are you a history teacher or geography teacher, or both?

History

Geography

Both

2. Are you male or female?

Male

Female

Prefer not to disclose.

3. How many years of teaching experience do you have?

Newly qualified up to 5 years experience

6 years to 14 years experience

15 years experience or more

4. Do you use ICT when teaching your lessons?

Yes

No

5. To what extent do you currently integrate ICT into your Junior Cycle classes?

Always

Frequently

Occasionally

Rarely

Never

6. Do you find it easier to teach your subject using ICT.

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree

7. To what extent would you agree with the statement: 'The use of ICT enables my students' to be more active and engaging during the lesson'.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

8. Do you think students learn more effectively with the use of ICT?

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree

9. Were you familiar with the term 'immersive learning' before this questionnaire?

Yes

No

10. To what extent would you agree with the statement: 'ICT provides an immersive learning experience for students'.

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree

11. To what extent have you implemented immersive experiences (e.g., virtual field trips/ tours, interactive simulations/ maps) in your Junior Cycle classes?

Always

Frequently

Occasionally

Rarely

Not at all

12. To what extent would you agree with the statement: 'Immersive learning is an effective way of allowing students to visualise and better understand the subject'.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

13. Do you think creating immersive learning experiences in the classroom through ICT helps students to connect with the real world?

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree

14. To what extent would you agree with the statement: 'I feel confident incorporating ICT into my lessons'.

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree

15. How satisfied are you with the level of training and professional development that teachers are provided with to support the use of ICT for teaching and learning?

Very Satisfied

Satisfied

Neutral

Dissatisfied

Very Dissatisfied

16. Do you think more training in ICT is needed for post-primary teachers in Ireland?

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree

17. To what extent would you agree with the statement: 'Throughout the Covid-19 pandemic, I felt adequately equipped as a teacher to use technology to teach my subject'.

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree

18. How challenging is it to implement immersive experiences in your classes?

Not challenging at all

Slightly challenging

Moderately challenging

Very challenging

Extremely challenging

19. Do you believe the use of ICT in creating immersive experiences has positively impacted the overall learning environment in your classes?

Extremely positive impact

Significant positive impact

Moderate positive impact

Slight positive impact

No positive impact

Thank you for taking the time to participate in this survey.

Many Thanks.

## Appendix B – Interview Schedule

### Interview Schedule

#### **Background:**

1. Do you teach geography or history, or both subjects?
2. How many years of experience do you have in teaching? –  
-How long have you been teaching in this school? Prior teaching experience – Where?

#### **ICT:**

3. How often do you use information and communication technology (ICT) in your lessons?
4. How long have you been integrating ICT into your teaching practices?
5. How do you currently integrate ICT in your geography and history classes?  
-Would you integrate it throughout the lesson/ at the beginning/ end?
6. Can you give specific examples of ICT tools or technologies you use to enhance the learning experience?  
-Or websites that are helpful for geography?  
-any year groups that technology is easier to use with?  
-timewise – senior cycle class?
7. Why do you incorporate ICT into your lessons?  
-Do you feel it is helpful/ beneficial for the students?  
-Impact for EAL students?

#### **Immersive experiences:**

8. Have you implemented immersive experiences (e.g., virtual field trips, interactive maps/ simulations) in your geography and history classes?  
-e.g. bringing the real world into the classroom.
9. If yes, please describe the immersive experiences you have implemented and the tools or technologies used. If no, is there a reason why?
10. How do you design and implement these immersive experiences to engage students?  
-Would you use them as a lesson starter to introduce topics?  
-Would you use them to backup/ reinforce what they have learnt?
11. What motivated you to incorporate immersive experiences into your teaching?

### **Benefits and challenges of immersive experiences:**

12. From your perspective, what are the main benefits of using ICT to create immersive experiences for students?
  - Does it visual content? Make concepts easier? Engage the students?
13. How have you observed students' engagement levels when using ICT based immersive experiences in the classroom?
  - Do the students enjoy it?
  - Do their concentration levels improve?
14. In your opinion, have these immersive experiences/ technologies influenced students' understanding and retention of a topic?
  - Do they improve the students understanding?
  - Does it help them remember the content?
15. Does ICT play a role in visualising the content for your students?
  - Beneficial for all learners? EAL students?
16. What challenges have you encountered in implementing ICT for immersive experiences in your classes?
  - any issues with WIFI?
  - is technology reliable in the school?
  - Computer room access?
  - Any issues with trolleys/ laptops?
17. How confident do you feel using ICT to create immersive experiences?
18. Have you received any professional development or training on integrating ICT in your teaching practices?
19. Do you feel more training in ICT is necessary for post-primary teachers in Ireland?
  - For you? In general, for other teachers would it be beneficial?
20. Throughout the Covid-19 pandemic, did you feel adequately equipped as a teacher to use technology to teach your subject?
  - Any issues you encountered?
21. In your opinion, how has the use of ICT in creating immersive experiences impacted the overall learning environment in your classroom?
  - good/bad?
  - beneficial for students?

## Appendix C – Information Sheet

### **Research Information Sheet for Participants**

As part of my Professional master's in education with Hibernia College, I am investigating the role of Information and Communication Technologies (ICT) within the Junior Cycle geography and history classroom. The current working title of my research project is 'Using ICT to create an immersive experience for students: A study of the post-primary Junior Cycle geography and history classrooms'.

This information sheet aims to provide you with an introduction to the research project and to seek consent from you for the project so that you might consent to participate in the study.

It is hoped that this research project will not only help myself but other post-primary teachers to assess and revise the use of ICT for the teaching, learning and assessment of Junior Cycle geography and history. The main aims of this research project are to investigate the impact of using ICT in the classroom and to examine teachers' perspectives surrounding the use of ICT as an immersive experience for students. Additionally, this project will assess the level of training and confidence amongst post-primary teachers surrounding the implementation of ICT and aims to build upon the knowledge of using ICT in the classroom in order to achieve improved student outcomes.

Information will be collected through online questionnaires and semi-structured face-to-face interviews. Teachers will be included in this research project on the basis that they are teachers of Junior Cycle geography or history. All participation is voluntary, and participants will have the opportunity to opt out if they wish.

This research project will follow the guidelines set out by Hibernia College's Ethics Committee, which are in line with BERA's Ethical Guidelines for Educational Research as well as the guidelines set out by the school's ethical code of conduct. In order to protect the identity of the school and participants involved, names and addresses will be omitted from the research findings and replaced with pseudonyms.

Only participants with returned consent forms will be permitted to partake in the study.

If you are interested in taking part, you fully understand what the research is trying to achieve and you have signed the consent form, then you will be emailed a questionnaire to complete.

You may also be asked to partake in a face-to-face interview using a semi-structured process. This interview will seek to answer the research questions of the study.

Please do not hesitate to contact me if you have any further questions or require further information.

**Researcher:** \_\_\_\_\_

**Mobile:** \_\_\_\_\_

**Email:** \_\_\_\_\_

This research study has received Ethics approval from Hibernia College Dublin. If you have any concerns about this study and wish to contact someone independent you may contact:  
School of Education, Hibernia College Dublin: Tel (01) 6610168.

Yours sincerely,

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## Appendix D- Research Consent Form

### Research Consent Form

**Researcher:** \_\_\_\_\_

**Title of research:** Using ICT to create an immersive experience for students: A study of the post-primary Junior Cycle geography and history classrooms.

Please read and complete this form carefully. If you are willing to participate in this study, tick the appropriate responses and sign and date the declaration at the end. If you do not understand anything and would like more information, please ask.

I, the participant, confirm that (please tick box as appropriate):

1.	I have read and understood the attached Information Sheet about this research project.	
2.	I have had time to think about whether I want to participate in this study.	
3.	I voluntarily agree to participate in the project.	
4.	I am aware that I am free to withdraw from the study at any time.	
5.	I understand that personal information will not be revealed in this study and my personal details will be dealt with in confidence.	
6.	I understand that I can request a copy of my data collected from my participation.	
7.	I am aware that the researcher is available to answer any queries that I have about this project.	
8.	I agree to sign and date this informed consent form.	

Participant signature: \_\_\_\_\_

Date: \_\_\_\_\_

Researcher signature: \_\_\_\_\_

Date: \_\_\_\_\_

## Appendix E – Interview Transcripts

### Interview Transcript 1

**Researcher:** Thank you for agreeing to do this.

**Interviewee 1:** You're very welcome.

**Researcher:** I just want to confirm that you consent to participate in this research project?

**Interviewee 1:** I do.

**Researcher:** And that you're okay with this being recorded?

**Interviewee 1:** I am, yep.

**Researcher:** Super. Okay, so do you teach geography or history, or both?

**Interviewee 1:** I am a geography teacher.

**Researcher:** An how many years of experience do you have teaching?

**Interviewee 1:** Six years.

**Researcher:** Okay, and how long have you been here in the school?

**Interviewee 1:** Um, I'm on my second year here, yeah.

**Researcher:** Okay, and prior to that where were you?

**Interviewee 1:** I was in Abu Dhabi for three years and then I was subbing here in Ireland for a year.

**Researcher:** Okay, great. How often do you use information and communication technology or ICT in your lessons?

**Interviewee 1:** Yeah. So definitely most lessons, if not every lesson. There's definitely some form of ICT, like your simple PowerPoint, video, whether it's a map, or any other general resources really for assessment purposes.

**Researcher:** Super. And how long have you been integrating ICT into your teaching practices?

**Interviewee 1:** Definitely since I started teaching because I would, I suppose, doing a lot of my what would be real life teaching in Abu Dhabi, and they relied heavily on ICT and each student had a tablet. So, I suppose it gave me a bit of a head start here in Ireland where I suppose only more recently since COVID that there's more of an influence on ICT in the classroom.

**Researcher:** Yeah, perfect. So, you're saying more at the start of your career you would have got a good head start with technology?

**Interviewee 1:** Exactly. Yeah. Yeah.

**Researcher:** And how do you currently integrate ICT into your geography classes?

**Interviewee 1:** Yeah. So, geography, definitely like your simple PowerPoint, like don't overcomplicate it. Then videos, um, of case studies, like formations, maps. It's brilliant. It's a fantastic visual aid. Yeah. Not only for your SEN learner, but for all students. Typically, I use it at the beginning of the lesson and I suppose to break up the lesson a bit as well. Like if you're doing, even to guide them to do group work or, um, like that as well. Like YouTube is a fantastic resource there for showing them how like volcanoes erupt, I suppose, for example. Yeah. and again for assessments and for homework as well. Then in Microsoft teams, I rely a lot on teams.

**Researcher:** Yep. and can you give any specific examples of ICT tools or technologies or websites that you use?

**Interviewee 1:** Yeah, um, Teams definitely. Yeah. Um, and I suppose that is for homework. I put up homework on that every day. So, students who aren't in or students who, I suppose, don't take homework down correctly, they have that as a resource. There's quizzes up there, chapter quizzes, PowerPoints, um, then myself, PowerPoint, the ability to differentiate for the SEN learner. The videos enhance and engage learners as well as Kahoot! for test the learning. Mentimeter is for class examinations. Blookit as well. There is various ones there that you can use.

**Researcher:** Would you say there is any specific years that you would use it with more?

**Interviewee 1:** Junior classes definitely. Yeah. It works better. One hundred percent. It engages them more. Yeah. Like, senior cycle, timewise wouldn't have that much time now. It's great for senior cycle because again, you can put notes up on teams and they have it there as a banked resource, but Junior Cycle more so to engage them. Geography as well, because it's quite meaty, it's quite wordy, it simplifies it for them.

**Researcher:** Yeah, perfect. And why do you integrate ICT into your lessons?

**Interviewee 1:** Again, it's definitely just to enhance learning experience for all students. Yeah. But then again, for that SEN learner, just to make sure that they're engaged and that they're having I suppose a positive learning experience as every other student.

**Researcher:** Yeah, perfect. And have you implemented immersive experiences in your geography classes?

**Interviewee 1:** Uh, yes. We did a field trip. Yeah. With junior classes. It was simply just about earth. We have in our school here, it's a community school, so we have a lot of different nationalities in that, so some mightn't know what a day on the farm was like. And we did that, done it a couple of times.

**Researcher:** Perfect. How do you design and implement these immersive experiences to engage the students?

**Interviewee 1:** Well I suppose, hands up I didn't design the experience I found, I found it online. Picking them, again, you have to know your students, and know what's going to engage them, and I suppose that's something that's as close to reality as possible.

**Researcher:** Yeah, perfect. And would you use it to kind of back up what you've learnt in class or to reinforce the learning?

**Interviewee 1:** 100%, yeah. Definitely, and I suppose as well at the start of class to access prior learning and that kind of thing as well, and to make sure they're engaged really.

**Researcher:** What motivates you to incorporate immersive experiences into your teaching?

**Interviewee 1:** To motivate students, because if they're motivated, then my job is going to be easier. Because if I'm just standing there and looking at students who aren't and don't look engaged or act engaged, it makes my life a lot harder.

**Researcher:** Yeah, perfect, grand. So looking at the benefits and challenges then of immersive experiences, from your own perspective, what are the main benefits of using ICT?

**Interviewee 1:** I suppose similar to what I said there, when you have a very mixed ability class, it's so important to make sure they're engaged. And I just, I think ICT is a fantastic tool for teachers to have the ability to do that. Geography, especially, I think it probably visualises maybe a bit more, 100 percent and simplifies it. Like, I definitely wish that we had the tools we have now when we were in school and like, you had no idea how a waterfall formed or how an earthquake happened. Like we had no visuals, you know, just literally lines on a board and go from there.

**Researcher:** Yeah. Perfect. And how have you observed students engagement levels when using ICT?

**Interviewee 1:** Definitely on a peak, like you can see a student and if I'm up there teaching and you know they're not with you but the minute you turn something on or it's like a movement, more like a movement break as well, they're doing something different, you have them again. Yeah, like you know it's brilliant.

**Researcher:** And do they enjoy it? Would their concentration levels be better?

**Interviewee 1:** Exactly. Concentration levels are better. Yeah. And you just know by them they are more engaged.

**Researcher:** Yeah. Perfect. In your opinion, have these immersive experiences influenced students understanding and retention of the topic? Or overall comprehension?

**Interviewee 1:** Yeah, I think so. And I suppose you're kind of coming to their level. If you think about it, like they have a screen in front of them from the minute they come in in the mornings and in the evenings and nights. And it's how they learn today. So, we may as well meet them at their level. And why not encourage them to learn through technology in class.

**Researcher:** Yeah, true. Perfect. Does ICT play a role in visualising the content for the students? We've probably already said that.

**Interviewee 1:** Yeah, like I said, I suppose when we were in school, we wish we had it. And it's definitely simplifying so many different scenarios in geography especially because there are some complex parts to it and it is, it's either right or wrong. Do you know?

**Researcher:** Yeah.

**Interviewee 1:** It makes it easier.

**Researcher:** Yeah. I might just throw in about, EAL learners as well. Does it visualise content for them?

**Interviewee 1:** Definitely for EAL learners. Like there obviously there is that language barrier and no more than anyone, if they can see it in front of them, then they can make their own, I suppose, conception of it. and hopefully it's the one you want them to make.

**Researcher:** What challenges have you encountered in implementing ICT into your classes?

**Interviewee 1:** The challenges I encountered, I suppose, there's such a variety of stuff out there online and to make sure you're not just picking something for the sake of it. That you're not just typing earthquake into YouTube and then an earthquake come up, it making sure that it's actually relatable material and it's going to enhance the learning experience for the students.

**Researcher:** Yeah, perfect. Is there any Wi Fi issues when it comes to school?

**Interviewee 1:** So you have your odd day, but yeah, generally it is good but I suppose kind of catch 22, don't always rely on it either.

**Researcher:** Yep, exactly, perfect. Then like individually in the school, if they were using computers or laptops, is that easy or more hassle?

**Interviewee 1:** Well I feel, it depends on your topic. Like definitely, obviously with the CBAs, where they have their own ownership of their projects and all that, but I suppose mapping, and getting them through their own research, it is good for them as well because they're going, kind of going down different avenues with it and then concluding themselves. So, pros and cons, but again, it all comes down to knowing your class, I think. You know if it's going to work.

**Researcher:** Perfect, yeah. And how confident do you feel using ICT as an immersive experience?

**Interviewee 1:** Yeah, fairly confident, definitely, but like that again, you constantly need to be watching out for what's new, like ChatGPT now and all that and just keeping up with the times. You're always learning yourself; I suppose.

**Researcher:** Have you received any professional development or training regarding integrating ICT into the classroom?

**Interviewee 1:** No.

**Researcher:** Okay.

**Interviewee 1:** Apart from what we did in college. What we did in college, how to use a resource, when to use it, like, for a lesson, what kind of resources to use at the end of a lesson, like for assessment purposes and all that.

**Researcher:** Grand. Do you feel more training in ICT is necessary for maybe yourself or other teachers, maybe?

**Interviewee 1:** Yeah, definitely. Yeah. I think some teachers love it and they'd have maybe five or six different ICTs elements in their lessons and then others would have none. So, I suppose for the students more so everyone needs to be on the same level.

**Researcher:** Perfect. Yeah. And throughout the COVID 19 pandemic, did you feel adequately equipped as a teacher to use technology?

**Interviewee 1:** Not at the start to be honest, because it was, it was teams this school uses, but a previous school I was in was using Google Meet which I was not familiar with. So, it took a while yeah. But then now it's a tool that I could actually never imagine not having for school. Like I rely on it so much and incorporate it into my classes.

**Researcher:** Perfect. And then finally, in your opinion, how has the use of ICT in creating immersive experiences impacted the overall learning environment in your class?

**Interviewee 1:** Well, I suppose the CBAs is probably the first thing that came to thought there. It definitely, it's created through the ICT and it gives them a huge ownership while it's engaging them in their learning. So, I think that's a massive aspect, but I just think overall it engages all students and enhances their learning experience.

**Researcher:** Perfect. That is the end.

**Interviewee 1:** Perfect.

**Researcher:** Thank you very much for participating.

**Interviewee 1:** You're very welcome.

## Interview Transcript 2:

**Researcher:** Okay. Perfect. So, first of all, I just want to make sure that you consent to doing this interview?

**Interviewee 2:** Yes.

**Researcher:** Perfect. And I also want to confirm that you are aware that this interview is being recorded?

**Interviewee 2:** Yes.

**Researcher:** Perfect. Okay. So, do you teach geography or history or both subjects?

**Interviewee 2:** History

**Researcher:** Perfect. How many years of experience do you have teaching?

**Interviewee 2:** Sixteen.

**Researcher:** Okay. And how long have you been here in this school?

**Interviewee 2:** Eight years.

**Researcher:** Okay. Perfect. So, to begin, how often do you use information and communication technology or ICT in your classroom or in your lessons?

**Interviewee 2:** Every day.

**Researcher:** Perfect. And how long have you been integrating ICT into your teaching practices?

**Interviewee 2:** I'd say over 12 years.

**Researcher:** Okay. Perfect. And would you say as the years go on you are maybe incorporating it a bit more?

**Interviewee 2:** Yeah, I think as the software has become more intuitive, it's easier to incorporate it. And the hardware is getting more reliable. And there's, you know, we use Office 365 here, so it's much more kind of integrated into the whole curriculum.

**Researcher:** Perfect. Lovely. And how do you currently integrate ICT into your history classroom?

**Interviewee 2:** I suppose it's the platform. It acts as a virtual classroom. Teams would be our, would be my go-to. Yeah, so it, it is an area that I can communicate with students, online in a safe environment. And it's completely controlled and it's a great repository for resources, for additional readings, for students that are maybe gifted and want to push themselves a bit more. So, there's extended support. And then for students that are maybe less able, there is possibility for more support with say videos and PowerPoints that they can refer to for their own revision.

**Researcher:** Perfect. Yeah. So, my next question is can you give examples of ICT tools and technologies or websites that you would use, but you were kind of saying those there. Is there anymore?

**Interviewee 2:** Yeah, teams, but obviously YouTube and all the rest.

**Researcher:** Yeah.

**Interviewee 2:** So, I suppose our job is really to filter information, you know, because there is so much stuff out there, it's really to try and hone in and focus on and allow students to use it wisely and efficiently by saying, look these are the clips that I think are very relevant for this particular topic.

**Researcher:** Yeah, perfect. Just adding in there about any specific year groups that you think ICT might work best with?

**Interviewee 2:** No, I think it's basically across the board, do you know what I mean?

**Researcher:** Yeah, and then why do you incorporate ICT into your lessons?

**Interviewee 2:** It's about working smarter not harder. It's like why would you reinvent the wheel all the time? If you create really good content that you know is tailored to your students, then you know next year you've got a repository, you're building your repository of information and also allows for, you know, we have our, we have our departmental teams, which allows us to share resources within the department.

**Researcher:** Yeah

**Interviewee:** And then just the collaboration amongst our other colleagues outside of our department. It allows us to have a look at what they're at. And that kind of sharing and knowledge within the department. It's for professional learning communities. And it allows for that collaboration, not just like if you want to go outside of school as well, you can collaborate with people from outside. So, it just gives that really, I suppose, a platform to allow that collaboration to happen.

**Researcher:** Perfect. And do you feel like ICT is helpful then for the students?

**Interviewee 2:** Yes. Yeah. Absolutely. Yeah.

**Researcher:** Do you feel it targets any students in particular, maybe SEN or EAL learners?

**Interviewee 2:** I think across the board, it's just everybody, it's like, people use it in different ways. And some may not use it at all. You know, let's be honest about it. But yeah, like those who do want to push themselves or those who do, you know, it's there for them. I mean, when I think back to my own school time, like, you never had any way that you could get assistance from your teachers outside of the classroom.

**Researcher:** Yes.

**Interviewee 2:** So, it's within reason, a kind of, a communication, you know, there is a way of communicating with your teacher outside of it. And, you know, the teacher within their own time will be able to, you know, if you're particularly stuck on something that you can have that open contact.

**Researcher:** Perfect. Yeah. Um, have you implemented immersive experiences into your history classes.

**Interviewee 2:** So, I do try to bring the real world into the classroom where possible, or when I can. So, for example with the famine, when teaching the chapter on the famine I have a virtual tour of a famine ship, down in Dunbrody that I've used to show the kids life, what life on the boat was like. Yeah, also field trips. We're actually planning a field trip at the minute. We're hoping to go to Portumna and to the castle. We've shown them peatlands and stuff like that. But virtually, there are so many tours and ways of, I guess bringing the world into the classroom, especially with timelines and graphs for history, with all the years and statistics. So, yeah, I mean. I suppose COVID has put a kibosh on it, and we would have done a lot more, but we're trying to get back into it now. Also, you know, more kind of headsets and virtual Oculus and stuff like that, I think that would be really useful because you could engage students more.

**Researcher:** Yeah

**Interviewee 2:** With AI I'm very excited about, because I also teach computer science, so I'm kind of keeping an eye on what's happening in that world and, you know, that you could say, you could get the AI to build Pompeii for the students and you know that you would specifically look at different rooms like this is a calderarium, this is a trepidarium, you know, like that you would have like those um rooms and you could go into them.

**Researcher:** Yeah brilliant.

**Interviewee 2:** It makes it real for them. Make it real, like put on the headset and you'd link it to the curriculum.

**Researcher:** Perfect, yeah, okay, and how do you design or implement these immersive experiences to engage students?

**Interviewee 2:** Well, at the moment it's in class, connecting it to the curriculum, but like, I think the future is exciting if we could get further technology, but then again, it's the department that is going to have to fund these things and, you know, we're going to have to train teachers on how to use this technology, but it is coming down the line, no doubt.

**Researcher:** Yeah. And the ICT and experiences that you use, would you use that to back up what you've learned or maybe to pre teach?

**Interviewee 2:** No, definitely to basically reinforce what has already learned, so it's to try and step out of the classroom and into, into the real world, and make it real for the students and that they'll remember it and connect to what they're learning.

**Researcher:** Yeah, perfect. And then what motivates you to incorporate ICT into your classroom?

**Interviewee 2:** I suppose the sufficiency of, you know, time and to make students that really want to push themselves that they have, you know, the, the resources to do that. Yeah. You know, that, uh, it's there for them if they really want to use it and, just, I suppose just in terms of my own teaching practice as well, so that I'm not spending time doing the same thing over and over again.

**Researcher:** Yes.

**Interviewee 2:** And then that gives me time to actually think about how we learn, you know, best. I'm really interested in like, reflecting and like, I'm kind of a strong believer in the idea of knowledge, like you do have to have knowledge and that you know, and through repetition we will eventually, like everyone will get there, just some people take longer. So, I'm like really interested in the whole idea learning and I think most people learn the same way. It's just, it's repetition. Like it's, it's sort of like ICT reinforces the learning all the time.

**Researcher:** Yeah, yeah.

**Interviewee 2:** And so, we're always trying to think of ways of how can I get through to students, you know what I mean?

**Researcher:** Yeah.

**Interviewee 2:** So, what's the best way? You know, it's not a one size fits all, but you can sort of try to get the most efficient way.

**Researcher:** Perfect, yeah. And so, from your perspective, what are the main benefits of using ICT in the classroom for the students?

**Interviewee 2:** For the students, I would think the best is to have I suppose, to bring the lesson to life, bringing in the curriculum that's not just text based. And like some, some people find that very difficult, like to, so it's really just using, and let's face it, that's the world they inhabit.

**Researcher:** Yes

**Interviewee 2:** So we need to, it's not like to do it just for the sake of doing it, but it's there, like, so why not use it and sometimes it's easier just to show a quick clip, and they're like, oh yeah, yeah, now I can see it, visually see it, and go, oh yeah, that makes a lot of sense. You know, a picture paints a thousand words.

**Researcher:** Yes totally, and so have you observed student's engagement levels, how have you observed the students engagement?

**Interviewee 2:** Yeah, like, if you're reading the textbooks, you still need to know that knowledge, but you do see them disengaging. And so, you need to interweave that with your, not just videos, but just even kahoots and stuff like that. But it does definitely raise the, raise the engagement.

**Researcher:** Yeah, perfect. And in your opinion, have these immersive experiences or just ICT in general influenced their understanding and retention of the topic?

**Interviewee 2:** Yeah, I would definitely see that the, that to show videos and to, you know, interactive experiences, like, like we were saying kahoots or quizzes or whatever, it definitely reinforces what they've learned.

**Researcher:** Perfect, yeah.

**Interviewee 2:** Totally. Yeah, and you know, I mean, I wouldn't use it at the start, but I definitely use it to just summarise it as a formative assessment, you know. And we've built our own forms on teams as well, so we can incorporate them. So, it's like multiple choice questions, 20 questions, five marks each, basically at the end of a chapter. And you can see a

correlation between, you know, those that are progressing well and those that aren't. And you can graph that. So, it's really useful in data. So that you can inform yourself to say, well, you know, if, you know, a student doesn't perform well at the summative test, you can say, well, God, you know, they, they really are good at doing projects and they're really good at formula. Maybe it's just the thing that it's exams itself they struggle with, you know?

**Researcher:** Yeah.

**Interviewee 2:** You know, it's probably not, um, you know, it's maybe at the mock you're looking at them and you're saying, you know, it's your exam technique that needs to improve rather than your knowledge of the subject.

**Researcher:** Okay, perfect. So, then, does ICT play a role in visualising the content for your students, do you think?

**Interviewee 2:** Yes. Absolutely.

**Researcher:** Do you think it's easier then or more beneficial for EAL learners? Regards to visualizing.

**Interviewee 2:** Yeah, absolutely. And I mean, there's technology there. I was only just talking to one of his students from Syria and he was saying that he remembers when he first came, he had no English and I, by using a PowerPoint could, put up some subtitles. And I remember saying to him, Omar, do you understand this? And then he was like, yeah. And he said that that was a way that just unlocked, you know, and made him feel part of the class.

**Researcher:** Yeah, okay. What challenges have you encountered in implementing ICT?

**Interviewee 2:** I suppose the big challenge that we have is that, you know, reliability. The fact that the, the government, the department still don't fund an IT technician. You know, for a school this big, like we should really have an IT tech. We're lucky to have a guy here at the minute doing placement this year. He's doing our IT, but like, you know, if he's gone, like, you know, so there's a real need.

**Researcher:** And you, yourself, you play a role with ICT and IT in the school?

**Interviewee 2:** Yeah, I do. So, I'm the ICT coordinator. So, like it's, it's self-ensuring. And Mr., two other teachers here, so we try to keep the show on the road, but it's brilliant to have somebody actually doing the break fix, you know, like that, oh, my projector isn't working.

**Researcher:** Yeah

**Interviewee 2:** You know, you walk into a room and your projector doesn't work or your PC didn't work, you're stuck, that's a challenge, you know, so we need to make it, you know, really reliable, but the government, the Department of Education need to be able to say, okay well, maybe they don't give us an IT technician, but maybe we share it in a cluster between us and the primary schools in town here.

**Researcher:** Yeah, true. Okay, and how confident do you feel using ICT?

**Interviewee 2:** Very confident.

**Researcher:** Perfect. Have you received any professional development or training in ICT?

**Interviewee 2:** Yes I, yeah, I would have attended, like workshops. From the department, or from Oide.

**Researcher:** Ok great and do you feel more training in ICT is necessary for post primary teachers, maybe not just yourself, but in general?

**Interviewee 2:** Maybe I would say workshops would be helpful. Yeah, definitely.

**Researcher:** And throughout the COVID 19 pandemic, did you feel adequately equipped as a teacher to use that technology to teach?

**Interviewee 2:** Um, well, we made an executive decision in the school and that was that every teacher was going to get a Microsoft Surface Pro 7, which meant that we had uniformity in the software we were using and also in the hardware we were using. So therefore, it meant that all teachers had the same access, you know, within, within reason. We can't control what Wi Fi you have and speed of it, or whatever. But we basically made it so that you had a device that was solid, that was using the same platform that the students were using. So we were prepared, I'd say we were adequately resourced in that way.

**Researcher:** Yeah.

**Interviewee 2:** But like in terms of broadband and stuff like that and engagement, it was very hard to, um, you know, for students for the best of their intentions, they didn't have, and may not have had devices at home. There was a bit of a kind of have and have nots during COVID. Yeah. So, sometimes we call that the digital divide. Yeah. And we do have students that come from challenging backgrounds. They're not going to have access to that technology. And they're relying on their phones. Which isn't easy.

**Researcher:** No, it's not.

**Interviewee 2:** It's not really an equal maybe opportunity. And like to be honest with you, big fan of IT and all the rest of it, but it's never going to replace traditional teaching. It can't. Like we've seen that. One lesson I came out with COVID, was that we are social beings, people learn best when they're actually in groups. And no matter how much you think that IT is going to replace that, it's not going to replace that. And it's not going to replace teachers. You know, so that's the, that's the good news. We are, we learn socially, like we learn as in groups. And we're conditioned to do that, and that's the way we evolve. And all the research says that.

**Researcher:** Last one then, in your opinion, how has the use of ICT in creating immersive experiences or just experiences in general, impacted the overall learning environment in your classroom?

**Interviewee 2:** I think it's a positive. Overall, it's a positive. There is challenges. Yeah. Um, you know, but like I would say we're definitely an 80 percent positive and 20 percent negative.

**Researcher:** Okay. Perfect. Lovely. Thanks so much for agreeing to do this today.

**Interviewee 2:** You're very welcome.

## Appendix F – Codes from interviews

Codes	Themes	Quotes
<ul style="list-style-type: none"> <li>• Positive learning experience</li> <li>• Encourages</li> <li>• Enhances learning</li> <li>• Motivates</li> <li>• Reinforces learning</li> <li>• Simplifies for students</li> <li>• Concentration levels are better</li> </ul>	<p>1. Significance and benefits of ICT</p>	<p><i>‘Virtual classroom’</i></p> <p><i>‘Fantastic tool’</i></p> <p><i>‘Raises engagement’</i></p>
<ul style="list-style-type: none"> <li>• Real world</li> <li>• Reality</li> <li>• Real</li> <li>• Virtual</li> <li>• Link to curriculum</li> <li>• Visualises</li> <li>• Immerses students</li> </ul>	<p>2. Immersive learning providing a real-world connection</p>	<p><i>‘a picture paints a thousand words’</i></p> <p><i>‘Brings the lesson to life’</i></p> <p><i>‘Fantastic visual aid’</i></p>
<ul style="list-style-type: none"> <li>• Equipped</li> <li>• Covid 19</li> <li>• Underprepared</li> <li>• Challenges</li> <li>• AI technology</li> <li>• ChatGPT</li> <li>• Workshops</li> <li>• Training</li> <li>• Filtering information</li> <li>• Relatable information</li> <li>• Professional development</li> </ul>	<p>3. Challenges and Training</p>	<p><i>‘You’re always learning’</i></p> <p><i>‘Digital divide’</i></p> <p><i>‘It’s never going to replace traditional teaching’</i></p>

## Appendix G - Themes from Transcripts

**Researcher:** Perfect. How do you design and implement these immersive experiences to engage the students?

**Interviewee 1:** Well I suppose, hands up I didn't design the experience I found, I found it online. Picking them, again, you have to know your students, and know what's going to engage them, and I suppose that's something that's as close to reality as possible.

Real world/ Reality

**Interviewee 2:** It makes it real for them. Make it real, like put on the headset and you'd link it to the curriculum.

**Researcher:** Perfect, yeah, okay, and how do you design or implement these immersive experiences to engage students?

**Interviewee 2:** Well, at the moment it's in class, connecting it to the curriculum, but like, I think the future is exciting if we could get further technology, but then again, it's the department that is going to have to fund these things and, you know, we're going to have to train teachers on how to use this technology, but it is coming down the line, no doubt.

**Researcher:** Yeah. And the ICT and experiences that you use, would you use that to back up what you've learned or maybe to pre teach?

**Interviewee 2:** No, definitely to basically reinforce what has already learned, so it's to try and step out of the classroom and into, into the real world, and make it real for the students and that they'll remember it and connect to what they're learning.

**Researcher:** Yeah, perfect. And then what motivates you to incorporate ICT into your classroom?

**Researcher:** Yes

**Interviewee 2:** So we need to, it's not like to do it just for the sake of doing it, but it's there, like, so why not use it and sometimes it's easier just to show a quick clip, and they're like, oh yeah, yeah, now I can see it, visually see it, and go, oh yeah, that makes a lot of sense. You know, a picture paints a thousand words.

Visualises

**Researcher:** And how do you currently integrate ICT into your geography classes?

**Interviewee 1:** Yeah. So, geography, definitely like your simple PowerPoint, like don't overcomplicate it. Then videos, um, of case studies, like formations, maps. It's brilliant. It's a fantastic visual aid. Yeah. Not only for your SEN learner, but for all students. Typically, I use it at the beginning of the lesson and I suppose to break up the lesson a bit as well. Like if you're doing, even to guide them to do group work or, um, like that as well. Like YouTube is fantastic resource there for showing them how like volcanoes erupt, I suppose, for example. Yeah. and again for assessments and for homework as well. Then in Microsoft teams, I rely a lot on teams.

**Researcher:** Yes totally, and so have you observed student's engagement levels, how have you observed the students engagement?

**Interviewee 2:** Yeah, like, if you're reading the textbooks, you still need to know that knowledge, but you do see them disengaging. And so, you need to interweave that with your, not just videos, but just even kahoots and stuff like that. But it does definitely raise the, raise the engagement.

Engaging/ Engagement

**Interviewee 1:** Yeah, um, Teams definitely. Yeah. Um, and I suppose that is for homework. I put up homework on that every day. So, students who aren't in or students who, I suppose, don't take homework down correctly, they have that as a resource. There's quizzes up there, chapter quizzes, PowerPoints, um, then myself, PowerPoint, the ability to differentiate for the SEN learner. The videos enhance and engage learners as well as Kahoot! for test the learning. Mentimeter is for class examinations. Blookit as well. There is various ones there that you can use.

**Researcher:** Would you say there is any specific years that you would use it with more?

**Interviewee 1:** Junior classes definitely. Yeah. It works better. One hundred percent. It engages them more. Yeah. Like, senior cycle, timewise wouldn't have that much time now. It's great for senior cycle because again, you can put notes up on teams and they have it there as banked resource, but junior cycle more so to engage them. Geography as well. because it's quite meaty, it's quite wordy, it simplifies it for them.

**Researcher:** Yeah, perfect. And why do you integrate ICT into your lessons?

**Interviewee 1:** Again, it's definitely just to enhance learning experience for all students. Yeah. But then again, for that SEN learner, just to make sure that they're engaged and that they're having I suppose a positive learning experience as every other student.

## **Appendix H**

### **Principal Letter**

Mr. ....

.....

.....

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December 2023

Dear .....,

As part of my Professional Masters in Post-Primary Education with Hibernia College, I am investigating the role of Information and Communication Technologies (ICT) within the Junior Cycle geography and history classroom. The current working title of my research project is ‘Using ICT to create an immersive experience for students: A study of the post-primary Junior Cycle geography and history classrooms’.

This letter aims to provide you with an introduction to the research project and to seek consent from you for the project to move forward in order to inform my future professional practice as a teacher.

It is hoped that this research project will not only help myself but other post-primary teachers to assess and revise the use of ICT for the teaching, learning and assessment of Junior Cycle geography and history. The main aims of this research project are to investigate the impact of using ICT in the classroom and to examine teachers’ perspectives surrounding the use of ICT as an immersive experience for students. Additionally, this project will assess the level of training and confidence amongst post-primary teachers surrounding the implementation of ICT and aims to build upon the knowledge of using ICT in the classroom in order to achieve improved student outcomes.

Information will be collected through questionnaires and interviews. With your permission, I hope to distribute twenty online questionnaires to teachers within the school as well as conduct two 30 minutes semi-structured face-to-face interviews with teachers. Teachers will be included in this research project on the basis that they are teachers of the Junior Cycle subjects of geography or history. All participation is voluntary, and participants will have the opportunity to opt out if they wish.

This research project will follow the guidelines set out by Hibernia College’s Ethics Committee, which are in line with BERA’s Ethical Guidelines for Educational Research as well as the guidelines set out by the school’s ethical code of conduct. In order to protect the identity of the school and the participants involved, names and addresses will be omitted from the research findings and replaced with pseudonyms.

Please find enclosed a copy of the information and consent forms, which will be distributed to teachers. Only participants with returned consent forms will be permitted to partake in the study. The results and findings from this study will be gathered as part of my dissertation for Hibernia College.

I would appreciate your cooperation in providing access to the staff of the school over the coming weeks.

Please do not hesitate to contact me if you have any further questions or require further information.

**Researcher:** \_\_\_\_\_

**Mobile:** \_\_\_\_\_

**Email:** \_\_\_\_\_

This research study has received Ethics approval from Hibernia College Dublin. If you have any concerns about this study and wish to contact someone independent you may contact:  
School of Education, Hibernia College Dublin.

Tel (01) 6610168

Principal's Signature \_\_\_\_\_

Date: \_\_\_\_\_

Researcher's Signature: \_\_\_\_\_

Date: \_\_\_\_\_