Title

An assessment of the efficacy of a collaborative technological intervention on the literacy and information literacy skills of a group of JCSP students

Declaration

I declare that the work described in this document is, except where otherwise stated, entirely my own work and has not been submitted as an exercise for a degree in any other university.

Signed: _____

Date: _____

Collins Montgomery

Permission

I agree that Trinity College Dublin may lend or copy this project upon request.

Signed: _____

Date: _____

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I would like to thank my supervisor, Sharon Kearney, for her invaluable advice and support throughout the writing of this thesis.

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Abstract

This research explores the relationship between literacy and information literacy skills in a group of Second Year Junior Cert students. Literacy skills were measured before and after a teaching intervention was implemented. The teaching intervention was focussed on the content area of religious Education and designed to explore the possible effects of information and communications technology on the literacy skills of the group. Questionnaires were used to assess religious affiliation and practice, as well as perceptions of ICT use. Focus groups were conducted following the intervention and literacy tests in order explore themes that were highlighted during the research. In general, the findings showed no discernible change in students' literacy skills following the intervention. This indicates the complexity of the relationship between literacy, information literacy, and ICT. Multiple interventions may be required in order to provide a more robust ICT learning support to enhance literacy and information literacy skills.

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1 1 Introduction

This research was born out of an email the researcher received from a student in which information was requested. It has been copied, see Figure 1.1, faithfully except for alterations to anonymise it. If it were to be assessed by an English teacher, and the researcher is an English teacher, there are several things which would need to be accounted for. Firstly, it has a function, requesting information. Secondly, it requires a response from its addressee. It includes a greeting and a salutation. All in all, as a functional piece of writing it succeeds. However, the minutiae of language come into play when we look at it with 'literate' eyes. There are no full stops, nor commas, nor capital letters. The pronouns "me" and "my" are mixed up. The indentation of the final two sentences seems somewhat arbitrary, and then it is completed with two emojis.

There are four broad criteria used in Leaving Cert English to aid correction which are:

Clarity of Purpose - Engagement with the set task; Coherence of Delivery - Ability to sustain the response over the entire answer; Efficiency of Language use - Management and control of Language to achieve clear communication; and, Accuracy of Mechanics – Spelling & Grammar. (SEC, 2016, 37).

Although these are only the headings of the first two it could be said that this writing achieves those, although to what level could be argued over, but the second two are more problematic, particularly if the reader demands of language in its forms that it is correct.

dear sir
its Anon i am writing this email to ask if u know my eportal i couldnt make it to the information night so i dont know it
i need to know it to see me results
please get back to me shortly

your favourite student

Anon.👌😊

Figure 1.1 Student Email Communication 2016

This led the researcher to consider the broad area of literacy and, more specifically the effect technology could have on it. This was further linked with online information literacy because the learners are in the researcher's Religion class, and often use the internet to access information which sometimes could be problematic in the researcher's experience. It was also an area the researcher wished to investigate because the current Junior Certificate Religious Education syllabus barely acknowledges the existence of the ICT world that exists.

The research questions the research seeks to answer are: What is the efficacy of a collaborative technologically enhanced learning (TEL) intervention on the literacy & information literacy skills of a group of JCSP students? There is also a secondary research question to be addressed: Do the students attitudes and perceptions of ICT have an effect on the TEL intervention?

Chapter two considers the literature defining literacy by international organisations such as PISA, and UNESCO, as well the NCCA in Ireland. Further investigation is carried out on information literacy, and finishes with an assessment of the literature on ICT and in what way literacy and information literacy skills could be affected by it.

Chapter three looks at the design of the technologically enhanced learning intervention. This follows the Bridge21 model being developed and implemented by a team in Trinity College, Dublin in schools across Ireland, involving both students and teachers.

Chapter four looks at the research carried out for this study. Questionnaires were carried out on religious affiliation and practice, and on the students' feelings about using ICT. They also had to take an internationally recognised literacy test before and after the intervention to see if it had had any effect on their literacy level. This was followed up by focus group semi-structured interviews.

Chapter five is a report on and discussion of the findings from the research to see what answers emerged, and whether they answer the research questions set in the thesis.

Finally, in the conclusion the research is discussed in its totality, what limitations were there in it, and what direction could any future research go.

The learners involved in the research are Second Year second level students in Dublin girls school. They are in a JCSP class. JCSP is a programme aimed at providing supports to students who may be in danger of leaving school early for a variety of

reasons. The school is mixed socially and economically with 50% of the class group in households where English is not spoken, or is one of at least two languages spoken. The imperative for literacy and information literacy skills in our technologically enhanced is ever more pressing and this study seeks to investigate a part of it.

2 Literature Review

This thesis is about the relationship between literacy and information literacy, and the effects of information and computer technology, if any, on them. These will be the focus of this literature review. It is divided into three sections. Section one analyses definitions of literacy; section two considers information literacy; and, section three analyses the effects of information and computer technology on literacy and information literacy.

2.1 What is Literacy?

The question of literacy is fundamental to this thesis for which the researcher will look at several definitions of literacy by international organisations, such as the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the Organisation for Economic Cooperation and Development (OECD) through its student assessment programme, the Programme for International Student Assessment (PISA). Investigation will also be carried out into the work of the National Council for Curriculum and Assessment (NCCA), an important state actor in education in Ireland, in this area.

Through PISA the OECD, an organisation of most of the richest and most powerful countries in the world as well as several partner countries and economies, carry out triennial surveys on reading, mathematical, and scientific literacy. One of the aims of this survey is that the countries involved "assess the strengths and weaknesses of their own systems", and depending on the result "seek to contribute to a shift in policy focus from educational inputs to learning outcomes" (PISA, 2003, 3). In this way improvements may be introduced to the education systems. However, it has been observed that there is a broadly economic agenda underpinning PISA, that the OECD "is naturally biased in favour of the economic role of public [state] schools. But preparing young men and women for gainful employment is not the only, and not even the main goal of public education" (Andrews, et al. 2014). The work of PISA is seen as something that is not value-free, that it has an outlook, an ideology, which the researcher and the reader need to be conscious of. OECD members are advised regarding policy matters with a view to future development and investment with implications for all stakeholders from government to schools to the general public. The

surveys are carried out every three years with a particular emphasis, or focus, on one of the three literacies, but nevertheless all three are assessed each year of the assessment.

The thesis is concerned with literacy and information literacy in general together with the impact of information and communications technology (ICT) on them, and will discuss and analyse some of the literature in this regard.

Following consultation with its advisory groups PISA arrived at the following definition of reading literacy which was adopted for the PISA surveys when they were first carried out in 2000: "Reading literacy is understanding, using and reflecting on written texts, in order to achieve one's goals, to develop one's knowledge and potential and to participate in society" (PISA, 2009, 23).

In the 2009 PISA document this definition was further refined as "Reading literacy: An individual's capacity to: understand, use, reflect on and *engage with* [my italics] written texts, in order to achieve one's goals, to develop one's knowledge and potential, and to participate in society" (PISA 2009, 23). However, this apparently subtle change – *engage with* - is a profound recognition of the difference in the type of texts with which young learners are engaging with an ongoing basis. This is an acknowledgement that the texts that "any definition of reading in the 21st century needs to encompass [are] both static and dynamic" (PISA , 2013, 4), that is, digital or multimodal, texts as well as the traditional text. Texts which were read up to relatively recently were, generally, static. For example, those which are found in books, magazines, newspapers, etc. It is the researcher's contention that owing to the rapid change that has occurred in the relatively recent past, texts are now no longer only static but are either, or can also be, dynamic. For example, those which are found in/on smartphones, laptops, tablets, e-readers, etc. This change in the makeup of the object, the thing we read is part of the focus of this thesis in regard to the effects it may have on the literacy skills of a group of JCSP learners.

In later PISA definitions there is a further change in reading literacy so that it is now defined as "*understanding*, *using*, *reflecting on*, and *engaging with* written texts, in order to achieve one's goals, develop one's knowledge and potential, participate in society" (PISA, 2012, 61; PISA, 2016, 3 (my italics)). The verbs, i.e. the action words, are now in a participle form used when describing a continuous or progressive action. The researcher contends that the use of this grammatical form further underlines the

dynamic nature of the digital text and is more in keeping with its perceived effects and the modes in which it is used.

UUNESCO has a membership of 195 countries and eight associate members, most of who are members of the United Nations (UNESCO, About Us, n.d.). UNESCO's remit is greater than the OECD's, to judge from their respective names, and its literacy definition is also broader and wider. Literacy for UNESCO may include other elements so that "Literacy is a fundamental human right and the foundation for lifelong learning' which 'is fully essential to social and human development in its ability to transform lives." Literacy can be seen to be central to the human in the world and without which there is little progress. Taking into account the changing world UNESCO goes on to note that "The uses of literacy for the exchange of knowledge are constantly evolving, along with advances in technology" (UNESCO, Statistical data, 2 (n.d)). What is in evidence here is the necessity of literacy in order to fully live in the world but it does not tell us what UNESCO understands this literacy to be, which shall be looked at next.

There are two parts to UNESCO's understanding of literacy. Firstly, it "has long defined literacy as the ability to read and write, with understanding, a short simple statement related to one's daily life" (Ibid.). This does not seem to be an exacting standard by which to define literacy and seems to be placed at rather a low level. Given the context of UNESCO's work throughout the developed and developing world there are "serious concerns raised about the validity and comparability of conventional literacy data and [the need to pay] particular attention to new assessment techniques" (Education for All, 2005,162). It seems that the level is placed quite low in the UNESCO definition in recognition of the difficulties in finding data that is reliable, valid, or, in some cases, extant.

In 1978, there was another change to the UNESCO understanding of literacy at the UNESCO General Conference which

> "approved the definition of functionally literacy as being able to engage in all activities in which literacy is required for the effective functioning of a person's group and community and which also enables them to continue to use reading, writing and calculation for their own and the community's development" (Education for All, 2005, 30).

Both PISA and UNESCO presuppose that an individual can and does participate in society and in their community's development. This provided some of the impetus for the researcher to focus his research on the JCSP students because of the necessity of all students attaining a level of literacy in which they function and engage with the multi-modal and the static text.

UNESCO, in the Salamanca Statement, provide an argument for inclusive schools because they "are the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society and achieving education for all" (UNESCO, 1994, ix). It is also noted in the same statement that "cost-effectiveness" is a further factor that should be considered and that the inclusive school with all learners, and literacies by implication, meets that requirement. Unfortunately, in the economic and political climate of recent years' government in Ireland has cutback provisions in many areas, and education too has been affected by this. Drudy notes that in 2008 "the first reaction of the state to Ireland's economic collapse… included cuts… targeted towards the support of economically disadvantaged groups" (Drudy, 2009, 51), precisely those groups most in need of inclusive schools and all that they can accomplish. Groups which would include some of those taking part in this research.

The writings on policy and assessment about literacy by organisations such as the OECD and UNESCO are, in large part, designed to influence the manner in which it is considered and implemented in their member countries. In Ireland, the legislative aspect of this falls to the Department of Education and Skills (DES). The DES are guided in turn by the work and research of the National Council for Curriculum and Assessment (NCCA) whose findings we shall now look at regarding literacy.

The NCCA has three aspects to its remit: firstly, to advise the Minister for Education and Skills; secondly, to engage with the different stakeholders in education (learners, practitioners, teachers, parents, and others); and thirdly, to carry out research in this area for all parties to education in Ireland (NCCA, N.D.). In 2010, the NCCA submitted a response, *Better Literacy and Numeracy for Children and Young People*, to the DES's draft document on literacy and numeracy. It noted in the document that

> "Literacy conventionally refers to reading, writing, speaking, viewing, and listening effectively in a range of contexts. In the 21st century, the definition of literacy has expanded to refer to a flexible, sustainable mastery of a set of

> capabilities in the use and production of traditional texts and new communications technologies using spoken language, print and multimedia"(NCCA, 2010, 5).

This definition is broadly in keeping with those proposed and used by both the OECD and UNESCO which at first are 'traditional' in range, limiting themselves to the print culture which arose in the past half millennium after Gutenberg's printing press. However, all three amend, alter, include, or transform the definition of what is to be understood by literacy with the recognition of the digital text in all its dynamism. Of course, in saying that, it becomes clear that not all people within one space, whether that be a school, city, or country have access to literacy in this fuller and wider sense because, without providing an exhaustive list, the means may not be available due to a variety of reasons, e.g. cost, capacity, or ability, to use digital technology, etc.

The researcher believes we have entered an age where the definition of literacy may be one thing but the practical application of it, in the sense of full participation, may be another owing to socio-economic reasons, amongst others. For example, the researcher's school in Dublin 22 is in an area where only 26% of its cohort are estimated to participate in higher education (HEA, 2014, 30).

What literacy is is a subject given to much debate as evidenced in the discussion above about PISA's, UNESCO's, and the NCCA's definitions of literacy. These different organisations have evolved their definitions over time as their research has revealed lacunae in their understanding and reach of what literacy is. Conceptual stasis about literacy in a world of flux is not possible. Research needs to take into account that some elements of our practices remain the same but different and differing elements are being added continually. How and that we understand them have become ever more necessary.

The researcher influenced by his research sees literacy as being enabled to understand, use, reflect, and engage with multiple multi-modal and static texts within the social contexts that we live in, and to be able to adapt to new ever evolving contexts.

2.2 What is Information Literacy?

The question of what is information literacy is important for this thesis because of the learning intervention which the group of learners are to undertake and about the effects of which the research will investigate.

Information is accessible at any moment on almost anything. Everything we want is a click away. However, what is accessed and its reliability needs to be subject to scrutiny. In the way that an English teacher will develop the tools by which her students can analyse a poem, so too do the tools by which information online is read need to be developed. That this issue has come to the fore recently can be seen in the example of this year's *Word of the Year* according to the Oxford Dictionary. It selected *post-truth*, "an adjective defined as 'relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief'" (Oxford Dictionaries, 2016). While appeals to emotion have always been successful to some extent, what is considered worrying today is that it was believed that the objective and scientific fact would trump that which was subjective and unscientific but in the wake of recent political happenings this no longer seems to be the case.

For example, in the 2016 Brexit referendum debate in the UK one of the leading figures arguing for Brexit, Michael Gove, claimed at one stage that "people in this country have had enough of experts" (Mance, 2016), in the context of being asked to name an economist who supported Brexit, and thus support his argument with objective fact. Another example from within the context of an Irish girls' school is the controversy around the Human Papillomavirus (HPV) vaccine. Scientific evidence would say that the two vaccines being marketed in many countries "are highly efficacious in preventing infection with virus types 16 and 18, which are together responsible for approximately 70% of cervical cancer cases globally" (WHO, 2017), but there is a reluctance by some parents to have it administered because campaigning parents "are certain that the HPV vaccine (Gardasil) is the cause of their daughters' otherwise unexplained illness" (REGRET, N.D.). The recourse to emotive language looks to appeal to someone looking for information, and to convince them. Note the contrast between the types of language, "efficacious" on the one hand and "certain" on the other, and how the immediacy of the latter can draw one in. There is too the use of "marketed" in the context of health advice in an age whose zeitgeist includes an angry scepticism

against authority whose presence could possibly cause irritation, or rejection of that scientific, peer-based advice.

We need to be able to go online and be assured that what we access is reliable, is written without prejudice, and can be accepted in good faith because we have to be able to recognise that which is reliable or unreliable, is written objectively, or subjectively, is to be trusted or rejected as dissimulation. It almost goes without saying that this is extremely difficult, if not impossible. It is not enough that an "assortment of technical, cognitive, emotional, and sociological skills … are critical for effective performance" (Eshet-Alkalai and Chajut, 2010, 173) online, learners also have to be schooled to be able to identify for themselves sites which can be trusted. Information literacy "involves creating the appropriate learning opportunities and contexts in which students can develop skills that allow them to effectively find, evaluate and use information" (Breen & Fallon, 2005). Students will need to be scaffolded because they are at an early stage of their second-level schooling in which so many things are new to them. Information literacy is something that "is necessarily demonstrated in a context and within a domain of content… (but) It is possible that the concept will involve different skills in some settings" (Bundy, 2004, 2). In this way, students acquire the skills to be autonomously decide about something they access, to be aware that something may not be what it claims to be, and that they accustom themselves to a certain level of critical thinking.

The difficulties involved are highlighted in a recent study carried out. This study looked to assess the "the ability to judge the credibility of information that floods young people's smartphones, tablets, and computers" and found that the results were "bleak", because "when it comes to evaluating information that flows through social media channels, they are easily duped" (Stanford History Education Group, 2016, 3-4). The degree to which the participants in this study were content to accept what was given to them, or not to investigate it, left the authors "in every case and at every level … taken aback by students' lack of preparation" (Stanford History Education Group, 2016, 3-4). The report writers are worried by the attitude, so to speak, of the participants who 'fail' to go beyond what has been given to them despite having the ability and means to proceed to investigate the issues involved. It is something necessary because "Critically constructing knowledge from multiple and diverse information sources is a core competence for learning in the information age" (Barzilai & Eshet-Alkalai, 2015, 87), and without which information literacy is underdeveloped and the capacity for the

learner to utilise information available is reduced along with their full participation in learning and in their community.

The understanding of literacy in this thesis is to understand, use, reflect on, and engage with multi-modal and static texts in an ever-evolving social context, and information literacy consequently, requires a certain level of literacy. However, for the students who are taking part in this research basic literacy is assumed, although differing from student to student. Moreover, in the context of a TEL intervention investigation has to carried out assessing to what extent their being used to digital media enables them to work and produce a meaningful artefact. Evidence seems to indicate that information given is not always questioned, and is instead accepted in general as correct without much consideration.

The students involved are Prensky's "Digital Natives". They were born into and have grown up speaking the digital language of "computers, video games and the internet" (Prensky, 2001, 1). Those who were born before are the opposite of natives, immigrants. However, this is not to be accepted uncritically because "use, experience, self-efficacy and education are just as, if not more, important than age in explaining how people become digital natives" (Helsper and Eynon, 2010, 504). Likewise increases in "digital literacy skills reflect the experience of using technology in everyday life, gained by the older population" (Eshet-Alkalai and Chajut, 2010, 178).

Prensky notes that in digital natives the need for reflection has appeared to be affected by the world they inhabit with their "hypertext minds" and that one of the challenges is "to figure out and invent ways to *include* reflection and critical thinking in the learning (either built into the instruction or through a process of instructor-led debriefing) but *still do it in the Digital Native language"* (Prensky, 2001, 11). The trauma felt by the authors of the Stanford study above is, perhaps, born out of their digital immigrant status and that they need 'to figure out' how it is that the digital native can increase his or her capacity for reflection, and thus be more information literate. Eshet-Alkalai and Chajut make a similar point when they note that "exposure of consumers to large volumes of information may eventually lead to a decrease in their ability to think critically about the information" (2010, 179). This makes it necessary to pursue a way that critical thinking is promoted so that greater discernment around what is engaged

with is fomented in all online users because information overload is not particular to the digital native if more people, whatever their age, use digital technology every day.

Up to this point in the literature review literacy and information literacy have been considered, but now the question of the effects of information and computer technology on them have to investigated.

2.3 What are the Effects of ICT on Literacy and Information Literacy?

The question of the effects of ICT in education is one which is much debated, and "how it might positively contribute to the education of our children" (Wild, 2009, 413). It has led to "many countries…[being] concerned with how ICT may impact schools and education" (Hatlevik & Christophersen, 2013, 240), and, pertaining to this particular thesis, "both language and computer literacies are of major concern to scholars and educators" (Radi, 2014, 79). It would seem natural that the use of ICT in school and in education is challenged and questioned. However, whether the answer might be in the positive or the negative, the school all of them? is already "an important environment in which students participate in a wide range of computer activities, while the home serves as a complementary site for regular engagement in a narrower set of computer activities"(Fu, 2013, 112). (In this context 'computer' should be understood as the whole variety of apparatuses for digital technology.) ICT in the classroom is an ever-increasing presence. A focus for investigation are in the ways it is being used, and the positive and negative effects of its use. For example, to ensure it is being used not alone as another tool in support of traditional teaching methods, but is also being integrated with key 21st Century elements such as "constructivism, collaboration, problem solving, creativity, active learning, team teaching, and the creation of personally meaningful artefact" (Sullivan, Marshall, & Tangney, 2015, 65) into classroom practice.

The NCCA notes that "The use of ICT in appropriate contexts in education can add value in teaching and learning, by enhancing the effectiveness of learning' and furthermore, 'ICT may also be a significant motivational factor in students' learning" (NCCA, n.d.). This value is also noted in a UK report which states "The evidence from the literature shows the positive effects of specific uses of ICT on pupils' attainment in almost all the National Curriculum subjects. The most substantial evidence is in the core subjects of English, mathematics and science at all key stages" (Cox et al., 2003, 3).

However, there are words of caution concerning ICT use in schooling which advise that "it is only under the right conditions that the claimed benefits [of ICT] can be realised. Central to these conditions is the teacher and the way in which he/she promotes learning through ICT" (Cohen et al, 2010, 61). This would seem to indicate the need to ensure that ICT is used with a proper pedagogy because without that the effects may not be as beneficial as desired.

In further research on the integration of technology in the school within the context of the 'Laptops Initiative', which was "aimed at enhancing literacy and inclusion in second-level schools through the use of mobile ICT" (NCTE, 2007) it was noted that "the data strongly suggested that 'validation' of the technology usage occurred very early in the process. In other words, teachers quickly identified that students were benefiting significantly – that the technology provided 'relative advantage'" (Daly & Conway, 2015, 197). Further possible benefits may be seen in another study which suggested that "the use of multimedia learning materials… has the potential to improve students' creative performance" (Kassim, Nicholas, & Ng, 2014, 18) but was not always practical. Elsewhere it can be seen that "the opportunity to use digital technologies in authentic, meaningful ways in-school was shown to sustain learner interest and motivation to complete the tasks and activities associated with in-school practices" (Leahy, 2015, 175). It may be seen that there is evidence from a number of sources that there is a positive effect on students' learning through the use of technology with the caveat that a suitably trained, pedagogically aware teacher may be required but that the effects may not encompass all outcomes. In the recent *Digital Strategy*, the necessity and value of this are recognised, "There is a need to ensure that ALL teachers are equipped with the knowledge, skills and confidence to integrate ICT into their practice" which requires training, theoretical and practical both at the outset and throughout a teacher's career because currently "All too often schools are not clear as to what ICT integration looks like and therefore are unsure how they can achieve it" (DES, 2015, 6).

In conclusion, we may see that the literature seems to indicate that technology can have a positive effect on the learners and their output. However, there are some concerns that access to almost infinite information is having some troubling consequences, such as a lowering of critical thinking, and an increasing inability to judge the veracity of the information accessed. This thesis will assess the literacy levels of a group of JCSP students before and after a technologically enhanced learning intervention. The question

it seeks to answer is to what extent this TEL intervention will affect the students' literacy and information skills. Within the context of this thesis it shall now be assessed what if any effects technology has on the related areas of literacy and information literacy.

3 Design

3.1 Introduction to the Learning Experience

The aim of this research is to assess if a collaborative technologically enhanced learning (TEL) intervention could improve the literacy and information literacy skills of a group of JCSP learners. This chapter will outline the rationale behind the design of the artefact and the learning intervention, and will demonstrate how that was put in to practice.

The introduction of technology into the classroom is not without its risks. There is a possibility that student engagement will not last very long given the level of literacy skills and information literacy skills that some of the students in this group are perceived to have. However, the students have displayed considerable enthusiasm in the past for the use of information and communications technology (ICT) in the classroom. It has been decided that the class adopt the wholesale use of ICT during this intervention, and the class will be organised along the social constructivist theoretical framework as initially outlined by Vygotsky and developed by others.

The students are required to prepare a journal topic for their Junior Cycle Religious Education assessment. This is to be presented by each group and will feed into the work that each student must do for their Religious Education journal (See Appendix 1). Given that this thesis is operating a Vygotskian framework they shall be working in small groups supported by the researcher who is also their Religious Education teacher. Moreover, it is considered that the task should be carried out using Enquiry Based Learning about which a short discussion follows.

3.2 Enquiry Based Learning

The students are going to engage enquiry based learning (EBL) through tasks, or project work, which have a real meaning for them because "people learn with particular effectiveness when they are engaged in constructing personally meaningful artefacts that can be shown and discussed with others" (Butler, 2015, 52). The students will have to construct a project and presentation based on a list of provided topics from which they choose one from three separate areas of the Religious Education curriculum: *Faith and Community*, *Foundations of Christianity*, and *World Religions: Islam*. (There are four world religions on the Junior Certificate Religious Education course – Buddhism, Hinduism, Islam, and Judaism – that the students could choose from but they are required to only study one which in their case was Islam.) These are a meaningful

preparation for their Junior Certificate Religious Education journal, and will also be cross-curricular because it ties in with their Junior Cycle English Oral Assessment in which they must deliver an oral communication task to the class about a topic. There may also be a positive effect in their overall literacy skills if the literature is correct which will help their other school subjects. The task is

> "practical in nature … [it places] more emphasis on the child than on the subject; [it] allow[s] the child to construct his or her own methods of approach to knowledge; [it] give[s] him or her the opportunity to 'learn how to learn'; [it] break[s] down the barrier between school subjects; and [it] utilise[s] a child's own interests" (Cohen et al, 2010, 246).

The EBL model has been chosen because some of the literature around it states it "is more student-centered, facilitates the learning of transferable skills and can improve the quality of teaching and learning" (Roche, O'Neill and Prendergast, 2016, 435). An interesting question arising in that paper, and one also applicable here, is the need to measure the level of engagement and effectiveness of an EBL intervention following its implementation. This may arise in during the TEL intervention or after in the focus group discussions.

An EBL approach ties in well with the intervention because the roles of the teacher and the student(s) are clearly defined. The former "establishes the task and supports or facilitates the process,' and the latter 'pursue their own lines of enquiry, draw on their existing knowledge and identify the consequent learning needs" (Kahn and O'Rourke, 2005, 1). In this case, it means that the basic parameters of content will be provided by means of a website specially created for this research, but also intended for use in the classroom after this research has concluded, and then explored by the students working together. It also entails the researcher moving around the learning space, going from group to group, to meet and discuss with the students as they engage with their task. Another aspect of EBL is that instead of being told what it is that they must know to complete the project the students "should participate actively in learning; in doing so, they actually learn better, as their questions help them comprehend and synthesize knowledge" (Buckner and Kim, 2014, 101). The active participation of the students in the creation of their own knowledge, rather than being passive recipients of what it is they should know, ought to allow for higher order thinking to take place. It is hoped that

this may help bring about the improvement in the students' literacy and information literacy skills.

3.3 Bridge21 and Implementation of the Learning Experience

The instructional model that the learning intervention has adopted is Bridge21's. Bridge21 is an "education programme" within Trinity College, Dublin who are offering a "new model for learning" (Bridge21, N.D.) with a focus on the use of ICT within schools, and other educational institutions. Bridge21 has effected a development of the Vygotskian and EBL approaches which were outlined above. It has been adapted for a 21st century learning environment so that it operates as a "Team-based, Technology mediated, Project based', and 'Cross- curricular" (Bridge21, 2017) activity.

The TEL intervention was organised and planned following the Bridge21 approach (see Figure3.1 below). The process around the length and the purpose of the learning intervention was explained to the students when the consent/assent forms were given to them and their parents, or guardians, as part of the approved ethical considerations. The purpose was outlined again prior to the start of the learning intervention, and was subject to further discussion and explanation during the TEL intervention.

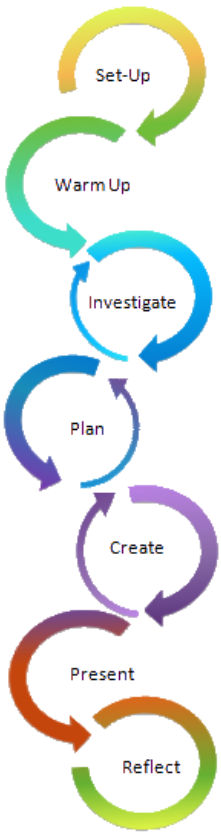

Figure 3.1 Bridge21 Activity Design

(http://tft-project.eu/index.php/the-bridge21-model/#investigate)

The initial plan (see Figure 3.2) was for the TEL intervention to take place over 3 weeks in which the students would have four classes each week for a total of seven hours' class time. However, this had to be amended because ethical approval was not received until the 22nd March 2017. This left less than three weeks, because of the Easter/Spring holiday, in which to get school, parental, and student consent and assent, together with carrying out the various focus groups, reflection task, questionnaires, and PISA tests prior to and after the learning intervention.

Set-up	Groups organised following questionnaires around religion, social influences, and ICT attitudes and perceptions. 4 students per group
Warm-up	Group activities with emphasis on team work and communication; groups drew up a charter with name, rules, and a team leader.
Investigate	Tasks emailed to everyone's school email account followed up by teacher/student discussion of tasks; 2 laptops per group.
Planning	Groups organise work distribution around tasks – 1) presentation on topic; 2) presentation/reflection on learning intervention.
Create	Groups plan, research, and practice.
Present	Each group presents one of its presentations to the class.
Reflect	Individual reflection followed by focus group discussion.

Figure 3.2 Activity Design Template following Bridge21 Model

The TEL intervention took place over five school days, at the end of one week and beginning of the next. It included one session of four classes on a Friday, split by a 25-minute break, for two hours in total. This helped make up for some of the shortfall but, at just under four hours, the final TEL intervention was someway short of the initial eight hours which had been hoped for.

The students were divided into groups after answering two surveys (see Appendices 2 and 3). The first concerned religious affiliation, influence, and practice, and the second concerned attitudes and perceptions of ICT for learning. These were used to inform the make-up of the mixed ability groups so that there would be more knowledgeable peers regarding religion and ICT in all groups.

It was observed that the students were, in several cases, ill-disposed to this manner of constituting the groups because they wished to be with other students whom they more regularly sit and work with. It was noted that the set up and warm up stages of the Bridge21 which followed the students being set up in groups were very useful because the students became re-acquainted with one another as collaborative learners. Although the students are in the same class they have divided up into groups based on friendship, interests, etc., and have not always worked together regularly in a meaningful way in the researcher's class beyond these groups. These initial stages brought about a change in the class dynamic with a substantive level of participation within the groups which

had appeared at first to lack enthusiasm for the project. However, this did not last in all cases throughout the TEL intervention.

It was also decided to take the students out of their normal classroom environment for the duration of the TEL intervention. The activity took place in an area known as the GPA (General Purpose Area) which is a large, spacious, and well-lit area that special activities often take place in throughout the school year. This was done so that the "design and layout of the learning space [would] support the collaborative nature of the learning activity" (Conneely et al, 2012, 17) unlike the traditional classroom which could hamper the students' ability to move around and investigate together, and thus, at the very least slow down the collaborative nature of the TEL intervention. This move was made possible by the acquisition at the beginning of this school year of a laptop trolley containing 15 laptops that allows collaborative technological work to take place anywhere in the school building, which hitherto had been confined to one of the computer rooms. However, since these machines are shared not all students log in and log out when they are using them. This led students to working under other students' log in and consequently being unable to access the work that they had done. This produced some frustration.

A link to the artefact was emailed to each of the students for ease of access. The students were talked through it in a class the next day so that the contents could be seen by all. In a second email a link to the webpage containing the journal topics was emailed to each of the students, as well as a brief outline of the presentations which they would have to make to the class in keeping with the Bridge21 model. The initial session, wherein the students began their work using the artefact, was taken by a colleague, who is both a Religious Education teacher and is the school chaplain because the researcher was unavailable due to school commitments with other students. It was noted by both the researcher and his colleague that the students tended to focus on the section title, e.g. Christianity or Islam, and work toward telling all that they knew about that rather than the topic title which would provide a focus, giving them something more meaningful to work toward. It was further noted by the researcher that certain basic ICT knowledge, such as the difference between *Save* and *Save as,* were not known by some of the students. (Perhaps better to say that the value of this was not realised by some of the students with one of them asking "*Do you have to do that?*"). This led to material being 'lost', or hard to find in subsequent sessions.

3.4 Student Work

The students had to work quickly and consequently the degree of depth and engagement with the tasks varied. Using Bloom's taxonomy it can be seen that some of the students begin to move into the higher order thinking beginning to analyse and reflect on their learning, whereas in others development is superficial, remaining at a level where they reproduce information accessed, and others reword the information accessed.

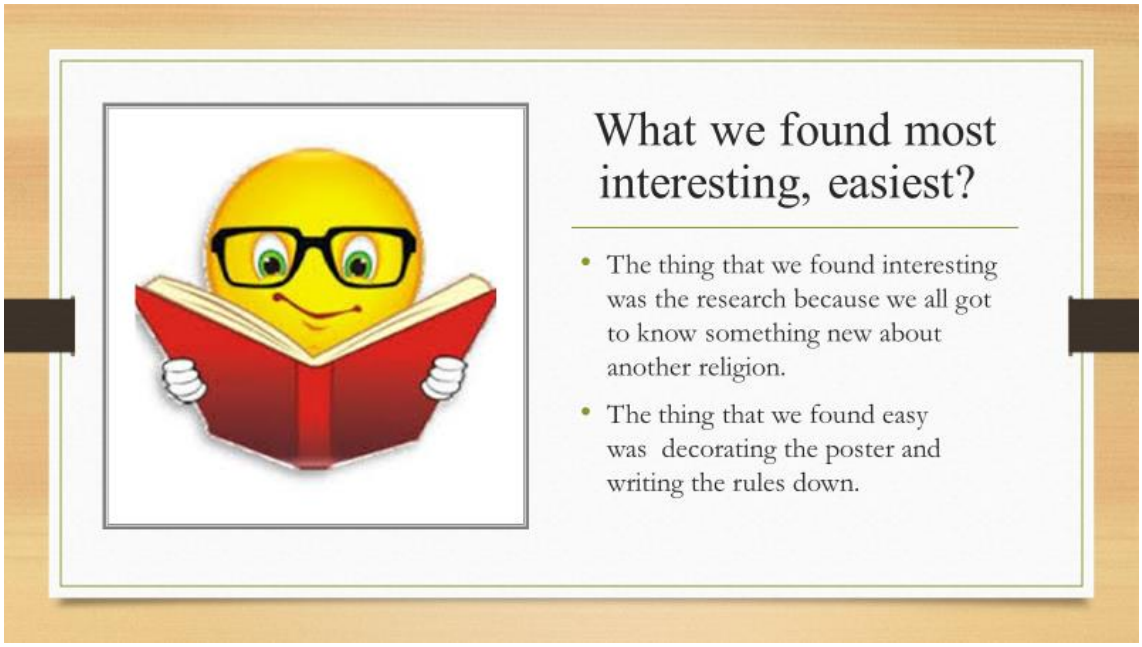

Figure 3.3 Student Work Showing Reflection on Learning

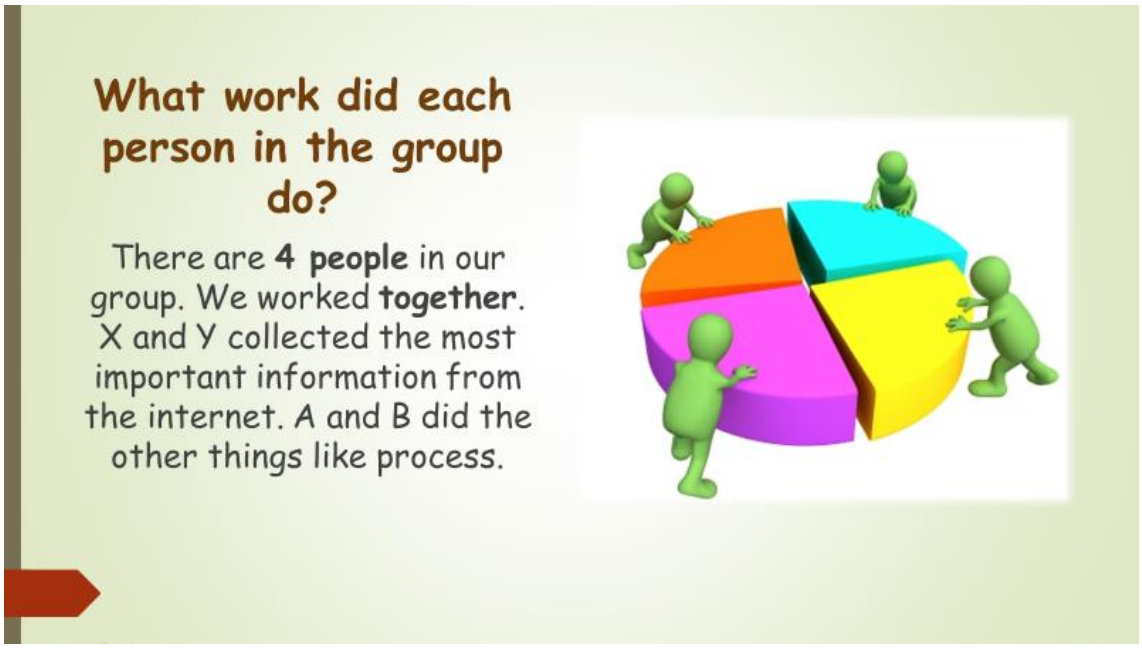

Figure 3.4 Student Work Showing Evidence of Cooperation and Collaboration

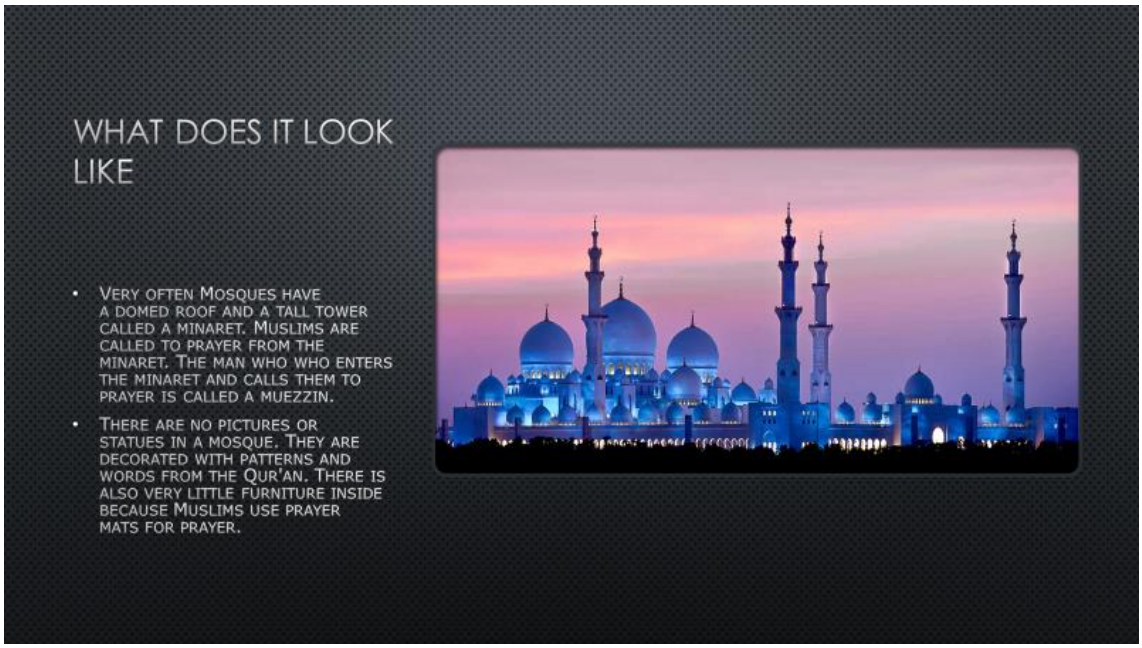

Figure 3.5 Student Work Showing Reproduction of Information Accessed

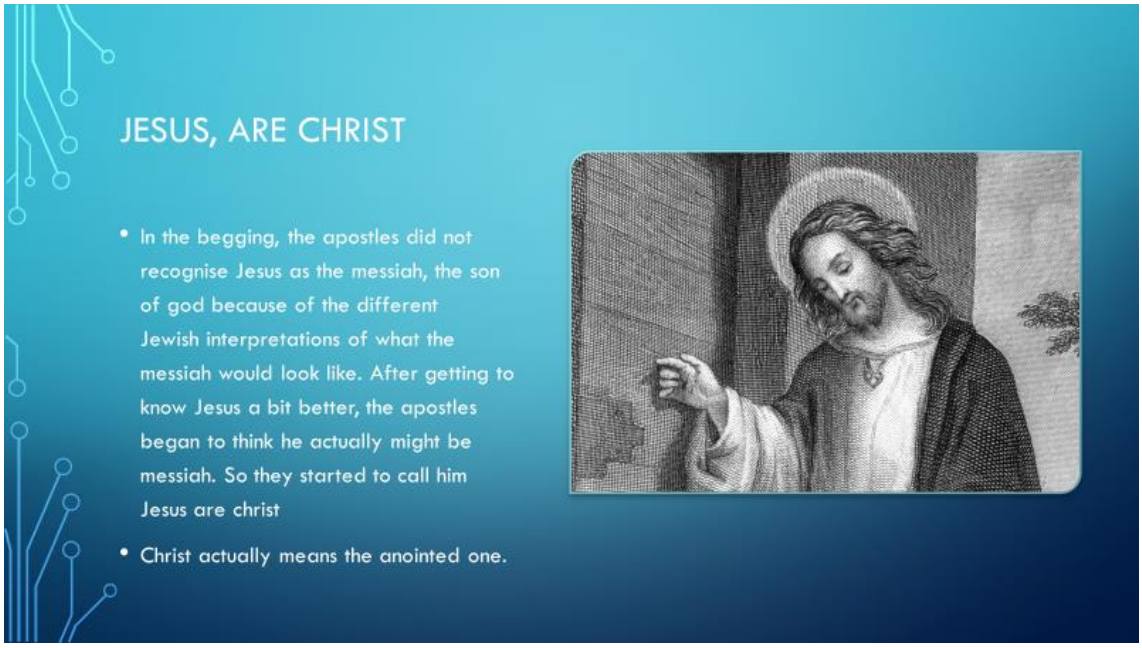

Figure 3.6 Student Work Showing Evidence of Paraphrase and Interpretation

3.5 Conclusion

The instructional design of the TEL intervention was organised using the Bridge21 model which is influenced by social constructivist theories of learning as well as by enquiry based learning considerations. The time over which the TEL intervention took place was not that originally envisaged by the researcher having to be compressed because ethical approval was received later than hoped for. This brought about a sensation of hurriedness and a perception that the students were having to rush their

work throughout the TEL intervention. There were also practical issues which arose during the intervention from using shared machines with students involved in the TEL intervention, and other students in the school not logging out at the end of their own sessions. These affected some students' ability to work as seamlessly as desired. Considerations around the effects that the implementation of the learning experience might have on the research questions will be addressed in the chapters on findings and conclusions.

4 Research Methodology

4.1 Research Questions

The research questions which this study seeks to answer can be divided into a main research question and several secondary ones. The main research question is: What is the efficacy of a collaborative technologically enhanced learning (TEL) intervention on the literacy & information literacy skills of a group of JCSP students? A secondary research question to be addressed is: Do the students attitudes and perceptions of ICT have an effect on the TEL intervention? Other themes may arise which will be discussed in the course of this study.

4.2 Case Study

It was decided that most appropriate means to consider the research questions was by case study. A case study would best be characterised in "essence [as] the detailed examination of a small sample … of an item of interest, and typically also from a particular perspective" (Tight, 2010, 337). This approach is apt for the small number of participants in the intervention who are being looked at from the perspective of the researcher. It is further stated by Yin that "the distinguishing characteristic of the case study is that it attempts to examine: (a) a contemporary phenomenon in its real-life context, especially when (b) the boundaries between phenomenon and context are not clearly evident" (Yin, 1981, 59). The case study was chosen to investigate the research question because it offers a wider range of methodologies, both quantitative and qualitative, which "may uncover some unique variance which otherwise may have been neglected by single methods" (Jick, 1979, 107) in the area under investigation in this research: a collaborative TEL intervention and the effects it might have on the literacy and information skills of a group of JCSP learners in a real-life setting, i.e. a school. The researcher is aware that triangulation often assumes "that the weaknesses in every single method will be compensated by the counterbalancing strengths of another" (Jick, 1979, 110) and, thus the weaknesses and the strengths of each method may persist despite the counterbalancing effects of one on the other.

What needs to be considered is that any changes to literacy and information skills may not only be due to the TEL intervention but also because the students engage with

literacy and information skills outside of the TEL intervention in particular, and the school environment in general. Literacy and information literacy skills are exercised every day due to the ubiquity of the digital world that the students live in. This is not the same as saying that they negotiate it with alacrity.

It is because of these variants that the case study with its investigation of real-life phenomena and its mixed methods was chosen.

4.3 Reliability and Validity

The question of whether this research is reliable and valid is an important one. Reliability is defined as when "data are reliable when repeated measurements of the same item are consistent" and validity is defined as when "data are valid when they provide accurate measurements of a concept" (Gilbert, 2008, 512 – 515). Reliability and validity would appear to be more self-evidently reliable and valid in quantitative data than in qualitative data because the latter is subject to questions of "descriptive, … interpretive, … theoretical, … evaluative, … and generalizability validity" (Onwuegbuzie and Burke Johnson, 2006, 278) than the former. However, there are dangers for quantitative data too at the "research design/data collection stage, … at the data analysis stage … [and] at the data interpretation stage" (Onwuegbuzie and Burke Johnson, 2006,275). For example, during the data collection stage one student who self-described as "Catholic" did not recognise "Roman Catholic" as her religion. In this case, if the researcher had adapted the CSO census further to encompass terminology that the students were more familiar with such as the above example, or "Protestant" instead of "Church of Ireland" there may have been fewer possibilities of misinterpretation.

The questionnaire about religious affiliation, religious practice, and the importance placed on certain social factors when deciding about something being right or wrong is reliable and valid because the results would be repeated consistently, and it records the concepts accurately.

The questionnaire about attitudes and perceptions of ICT provides data which is reliable and valid because the results would be repeated consistently, and it records the concepts accurately.

There is a caveat around the questionnaires depending on the level of comprehension that an individual student might have which could preclude them from full understanding, and may require assistance from another.

Similarly, the interpretation of the focus group discussions is tied in with the subjective prism that the researcher brings to bear on the data that emerges from them. The researcher may try to be 'objective', but inherent beliefs around ICT and its location in the TEL intervention and the social context in which the school and its students operate will have an impact.

4.4 Data Collection and Analysis

Data Collection Tools

There were several different data collection tools used during this research: questionnaires, tests to assess the literacy levels of the group prior to and after the TEL intervention, and unstructured interviews in small focus groups. The questionnaires were adaptations from other sources: The Central Statistics Office National Census 2016 regarding religious affiliation (CSO, 2016, 7), and from a research paper concerning the use and attitudes toward ICT (Oyaid, 2010, 37-38). The tests around the literacy levels were taken from the PISA Reading Test 2006 (OECD, 2006, 7 – 20, 42 – 50) and the PISA Reading Test 2009 (ERC, 2009, 232 - 250) to provide a literacy level from before and after the TEL intervention. The focus groups will explore students' attitudes to the TEL intervention in more depth. Focus group discussions will be structured according to themes that emerged during the TEL as well as those arising out of the research questions.

Data Analysis

The results from the questionnaires around religious affiliation, and ICT usage and attitudes were entered directly by the researcher into the computer using the software available in Microsoft Office. The results from the PISA Reading Tests were analysed and corrected by the researcher using the answers and marking scheme available from PISA online (OECD, 2006, 7 – 20, 42 – 50; ERC, 2009, 232 – 250) and entered directly into the computer. The focus groups' discussions were transcribed by the researcher into Word. They were analysed, and coding was applied to observe the different themes that emerged arising out of the students' comments.

4.5 Implementation

4.5.1 Participants and Profile

Religious Affiliation

A questionnaire was given to the students to ascertain the religious makeup of the class, the level of participation by each of the students in their religion, should they have one, and the influences that religion and other social factors in their lives might have regarding whether something is right or wrong. This knowledge would feed into the groups which the students were to be assigned to in the TEL intervention. The first question in this questionnaire was adapted from Census 2016 with the only difference being that of placing the choices in alphabetical order. The other questions were drawn up by the researcher. See below for the CSO census question followed by the researcher's adaptation (Figures 4.1 and 4.2)

Figure 4.1 CSO Census 2016 Religion Question

1. What is your religion?

Mark one box only

	Church of Ireland
	Islam
	No religion
	Orthodox
	Presbyterian
	Roman Catholic
	Other, write in your religion below, one letter per box

Adapted from CSO Census 2016 (http://www.cso.ie/en/media/csoie/census/census2016/2016censusforms/65995_English_Household_2016_New_Version_Do_Not_Complete.pdf)

Figure 4.2 Student Religious Affiliation

It has been the researcher's experience as a Religious Education teacher that students who come from particular religious backgrounds tend to have a certain prior knowledge regarding religious matters. Likewise, those who attend religious practices more often also bring prior knowledge to bear in this area. In Figure 4.3, all 24 (100%) students affirmed that they had a religion. This is unlike the recent census in which those who answered, 'No religion' to the question 'What is your religion?' is 9.8% (CSO, 2017, 72). However, Atheist Ireland believes that in posing the question as 'What is your religion?' it assumes that you have a religion and people answer accordingly. Atheist Ireland, one of a number of lobby groups dedicated to bringing about absolute separation between the state and religious groups, believes it would be better to pose the question as 'Do you have a religion?' because "more people say they have a religion when asked ['What is your religion?'], than do when asked 'Are you religious?' or 'Do you have a religion?' (Atheist Ireland, n.d.). It is possible that something similar could have occurred here. It is also notable that Pentecostals make up less than one per cent of the national population (CSO, 2017, 72) but in this class, make up 25%. Similarly, showing that the religious make-up of the class is out of kilter with the CSO figures is that Roman Catholics make up 78.3% of the national population but only 58.3% of the class group. It was observed that some of the students did not know at first which

religion to choose as they described themselves as Catholic but did not see it included in the list. The researcher indicated to them that in this instance they needed to fill in the box marked Roman Catholic.

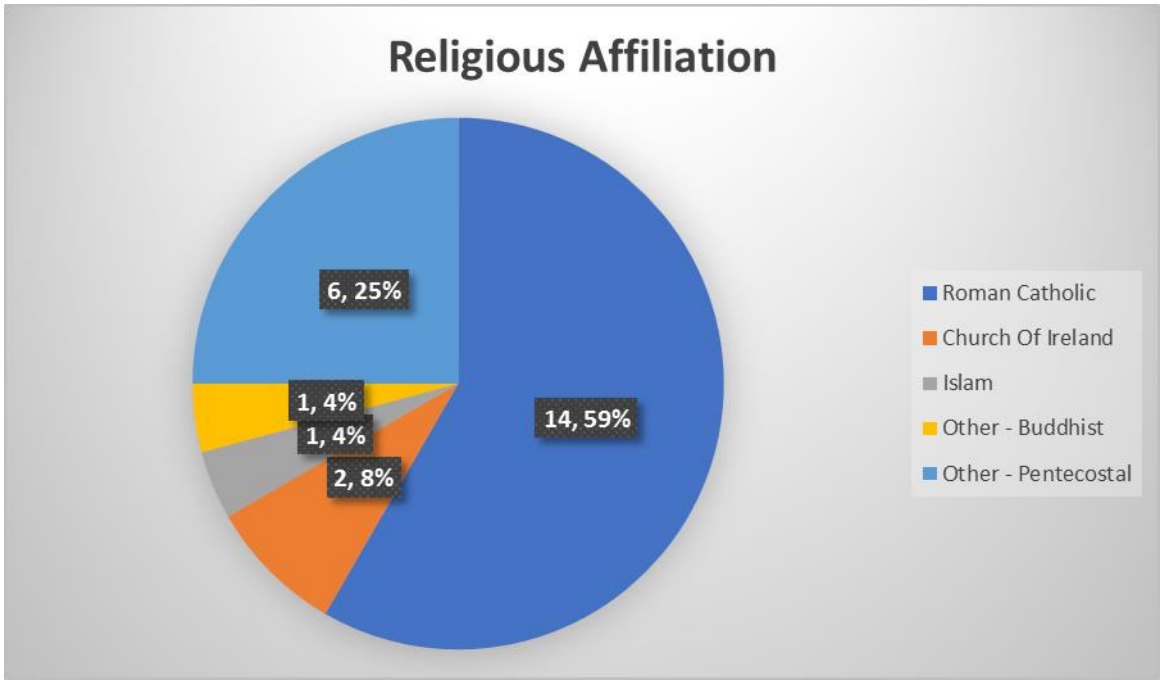

Figure 4.3 N=24. Religious Affiliation.

Religious Practice

Religious practice, see Figure 4.4, was another factor considered in the makeup of the groups for the TEL intervention. Those who practice their religion more regularly are considered by the researcher to have greater levels of prior knowledge which would add to those considered to be more able others in this context. On the other hand, those whose levels of participation are minimal possibly have lower levels of prior knowledge and would need to be placed in groups with those who have greater knowledge. It was observed in conversations with the students that daily practice of religion consisted of praying five times a day, or reading the Bible as a family each evening; that weekly and monthly practice was understood to be attendance at a religious service; and special occasions was uniquely attendance or practice for baptisms, marriages, or funerals.

It is noticeable that there was something of a crossover between those students who practice their religion daily and religious affiliation with the one Muslim student and three of the Pentecostal students making up that group. This was in line with expectations from the researcher's prior knowledge of the group.

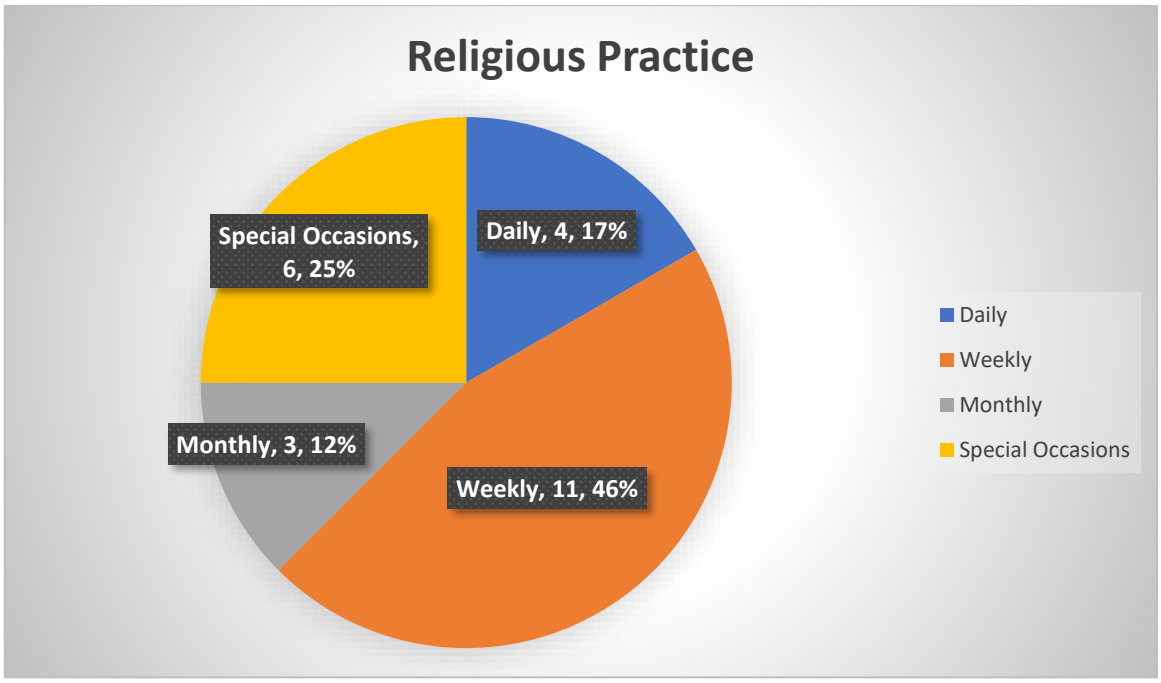

Figure 4.4 N=24. Religious Practice

Social Factors Influencing Decisions

The third question asked the students to rank in order of importance, one being the most important and seven being the least important, social factors which influence them in deciding whether something is right or wrong. The purpose of this was to ascertain the importance and influence that religion has in their lives and to use this to help construct the groups regarding prior knowledge. Two of the students only nominated the most important factor influencing decisions of right and wrong, a third nominated only the most and the least important without any intervening choices, and a further four nominated all except a seventh choice. Where 'Other' was nominated only three students named that other which in all three instances was "Make up". Perhaps, an example of collaboration in action.

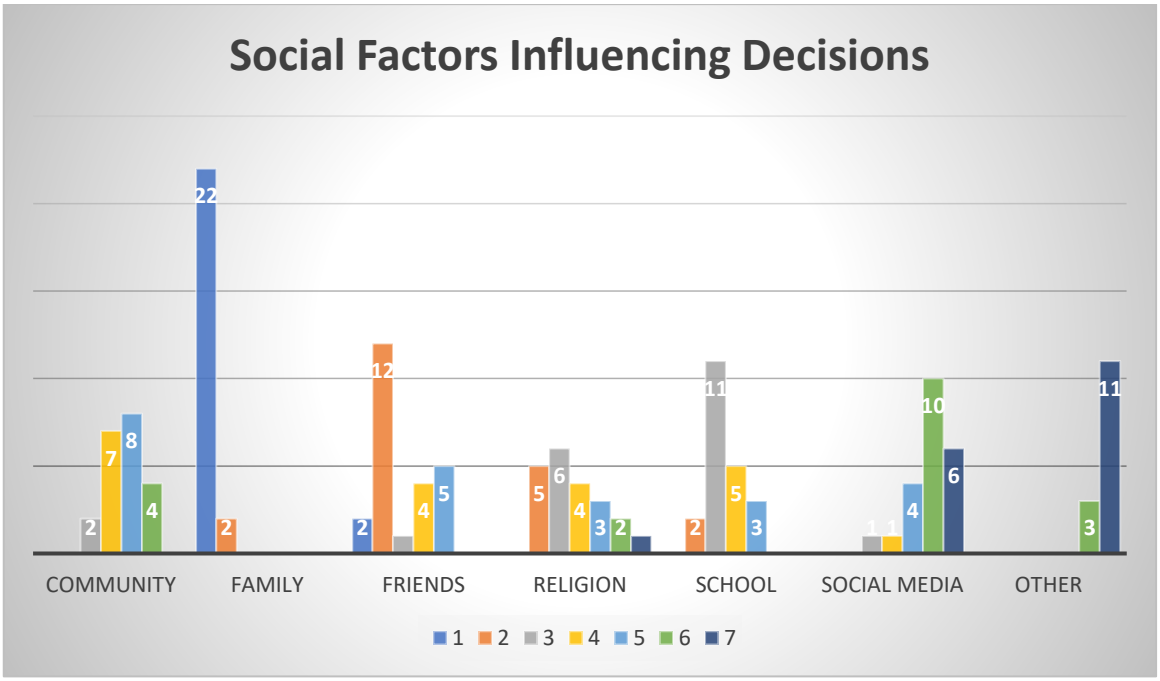

Figure 4.5 N=24. Factors for Making Decisions

Given their young age, it is perhaps not surprising that family, see Figure 4.5, was overwhelmingly the single most important influence in deciding whether something was right or wrong. 22 of the group indicated it as number one with the other two placing it second. The second most influential factor was friends with two naming it as the most important and 12 naming it as the second most important factor. Regarding the third most important factor there was something of an equivalence between school and religion. Five students nominated religion as the second most important factor compared to two who did so for school. However, 11 students nominated school as the third most important factor compared to six who did so for religion. In terms of those who placed little or no importance on religion there were six students who nominated it at five, six, or seven. With one exception, they were also students who practise religion on special occasions. The other factors of Community and Social Media were of less importance for the students when making decisions regarding right or wrong. This data enabled the researcher to construct the TEL intervention groups on Vygotskian lines with more able peers in terms of religious influence, knowledge, and practice being divided up across the six groups.

There are 24 students taking part in the research. They are in Junior Certificate Schools Programme JCSP) class. JCSP is aimed at students who may leave school before taking the Junior Certificate. It is “a social inclusion programme that is aimed at students who

are identified as being at risk of being socially or academically isolated or at risk of early school leaving" (JCSP, 2006/2017). In effect JCSP provides these students with a series of supports, academic and general assistance, which is designed to enable them to remain within the school system. The students were placed in this JCSP class for several reasons: firstly, reading and maths scores received from their primary schools were on the low side; secondly, socio-economic factors; thirdly, difficulties or lack of experience communicating in the school's first language, English; and, finally, because the other classes in the year group, divided up on a mixed ability basis, were full up. Chance, a philosophical concept, occasionally and regrettably, can play a part in decisions affecting someone.

Class groups being streamed in this way lead to situations where "students develop very negative views of their own abilities", and "prior differences in terms of social class and ethnicity" (Smyth and McCoy, 2011, 9) are accentuated. It is to be noted that when told that they were a JCSP class the group reacted poorly with one of the students asking the researcher "*Does this mean we're the stupid class?*" This comment illustrates the first of Smyth and McCoy's points. The second is illustrated from the religious make-up of the class with a large minority of the class marking Other in the survey on religious make-up and practice, adding in Pentecostal in this instance, as well as Buddhist, and Muslim. Regarding the latter point, all classes in their cohort would have similar differences in social class and ethnicity.

4.6 Ethical Considerations

The researcher is the class group's Religious Education teacher as well as their class tutor. As class tutor the researcher in practice is the first point of contact when the students and or their parents/guardians are looking for information from, or wish to pass on information to the school, e.g. concerning sick notes, appointments, minor disciplinary issues. The researcher was aware that being in such a position placed him in a relationship regarding the students which could have impinged on their capacity to make a truly autonomous decision regarding participation. Ethical approval was sought from the TCD Research Ethics Committee to guide the limits of this research, and once received, consent was sought from the school's Board of Management, the students' parents and guardians, and the assent of the students which were also received (see Appendix 4).

Throughout the TEL intervention the purpose of each stage was explained to the students and any questions they had were answered by the researcher, clarifying matters so that they understood what was happening. The researcher sought to maintain the students' assent as the TEL intervention and the associated research was an evolving process which revealed information about the participants at each stage about their beliefs, aspects of their academic ability, and opinions of the TEL intervention, and their class colleagues.

4.7 Literacy Levels

In the literature review above discussion was made of several different definitions of literacy amongst which the PISA definition "understanding, using, reflecting on, and engaging with written texts in order to achieve one's goals, develop one's knowledge and potential, participate in society" (PISA, 2013, 61) is the one that the researcher believes more fully represents what literacy is because it places literacy as a fulcrum in our relational activity as an autonomous being in the world.

Every three years PISA carries out mathematics, reading, and science tests around the areas of literacy and problem solving to 15-year-old students from its member and associate member countries and organisations. It is an internationally recognised test which acts as a standard by which a level may be accorded to those who take it. The researcher elected to give this test from two different years, 2006 and 2009 (see Appendices 5 and 6), to the class group before and after the TEL intervention to observe whether any changes had been achieved in the students' literacy levels. Given that the PISA test is an internationally recognised test it would appear to meet an acceptable objective standard by which to measure the students' literacy levels. Its own definition of literacy is one which the researcher is using in this study, which was a further reason to use previous tests that students had received. Contact was made with the Educational Research Council, who run the PISA test in Ireland, to establish the administration of the test. The researcher was informed that there are "15 questions for one 30-minute module" (G. Sheil, personal communication, 21st February 2017) which were thus given to the students. There was a change in the 2009 test compared to previous tests in that "the reading framework has been updated and now also includes the assessment of reading of electronic texts" (PISA 2009, 3), but still in a paper format which was followed in the administration of the tests in this research.

4.8 Focus Groups

Once the TEL intervention, as described in the Design section above, and the post-TEL intervention literacy test had taken place a series of focus groups were held with the students. The focus groups were semi-structured, consisting of the researcher and a small number of the students, between three and five in each one. The students arranged their own groups because it was hoped that they would be more comfortable discussing matters with their friends from the class instead of the TEL intervention groups. It had been noted by the researcher during the TEL intervention that they had not been entirely happy with how the groups had been constituted for it.

The purpose of the focus groups was to gather data on the students attitudes toward the TEL intervention, their opinions regarding ICT in general, and more specifically in school, and finally how they perceive their ability to work with and look for information online. Below is a list of questions, not all of which were used with each group as the students pre-empted them in their discussion, and were asked by the researcher to guide the students in their responses:

a. Questions about literacy and information literacy – Do you like reading? How often do you read? Do you understand everything you read? What do you like/dislike about reading and writing? When you message do you use textspeak? What are typical examples you use? Do you understand all the terms people use online? How often do you message? What kind of sites do visit? Do you go online to find out information? Do you trust what you find online? How do you know that what you are reading or hearing is reliable? Do you have a way of checking something is correct online?

b. Questions around the use of and attitude towards the TEL intervention – Did you enjoy the experience? What did you like about it? What were your favourite/least favourite parts of it? Do you think you learnt more, or less, in this way than in typical school activities? Would you like to do it again? What aspects of it would you like to be the same/different?

c. Questions around the use of ICT in school – How important is ICT to you? Why is it important? What do you use ICT for? What do you think of the current use of ICT in school? Would you like to use ICT more in school? If yes, are there certain subjects you would use it in more? What are they? Why did you decide on the subjects you did? In what way does ICT help you in your schooling?

4.9 Context of the Technologically Enhanced Learning Experience

Ethical approval for this research, eight weeks after its submission, was received on 22nd March 2017. Consent was received from the Board of Management via the Board Secretary, prior to its meeting, on the 23rd March 2017. The questionnaires, the PISA pre-TEL intervention test, and the parental/guardian consent and student assent forms were conducted and given out the week beginning the 27th March 2017. The TEL intervention began on Thursday 30th March 2017 and concluded Wednesday 5th April 2017. The focus group interviews were conducted on Thursday 6th April 2017. The post-TEL intervention took place on Friday 7th April 2017. This was quite hasty because the two week long Easter holidays began on Friday 7th April 2017. Otherwise it would not have been possible to have the thesis completed by its deadline of 3rd May 2017.

The students involved are girls in a Dublin secondary school. There were 23 girls who took part in all the research, and one girl who took part in the initially but was then absent for the rest of the study. They range in age from 13 to 15 years old - 17 of them are 14 years old, five are 13 years old, and one is 15 years old. It would

The students will need to work together on a variety of projects for their Junior Cert Religious Education journal which, whether they take either higher level, or ordinary level, is worth 20% at both levels (SEC, 2016, 1). The aim of the syllabus is multi-faceted and while not exclusive to any one religion it does acknowledge the historically important part played in Ireland "in particular (by) the Christian tradition", and it also seeks "To appreciate the richness of religious traditions and to acknowledge the non-religious interpretation of life" (Junior Certificate Religious Education Syllabus, 2000, 5). The course as taught is not about faith formation, but rather knowledge about faiths and meaning, both non-religious and religious. The ethos of the school is itself Christian, and more particularly Roman Catholic, but its student population is multi-cultural. Regardless of that ethos, the school would consider itself as an actively inclusive school.

In the 2016 Census the percentage of Roman Catholics in the Republic of Ireland was 78.4% CSO, 2017, 72). However, it is noteworthy that in December 2011 the Roman Catholic Archbishop of Dublin, Diarmaid Martin said, "On any given Sunday about 18% of the Catholic population will attend Mass" (Martin, 2011). This data suggests that although a large number of the population may say that they are one religion, in this case Roman Catholic, the level of practice can be quite different. In this regard, there

may a disparity between what the religion holds as tenets of belief and the level of knowledge among the population about those tenets of belief owing to an absence of attendance and the contact on an ongoing basis with that set of beliefs in practice. Consequently, a degree of guidance will have to be offered so that the learners' ability to work online safely will not be compromised rather than them accessing any information online.

5 Findings and Discussion of Findings

5.1 Introduction

This chapter describes and discusses the findings which emerged from the research. Section one deals with the students attitudes and perceptions toward ICT and consequently to the TEL intervention. This may have had an effect on the outcome in some cases.

5.2 ICT Attitudes and Perceptions

A survey *How You Feel About Using ICT* , see Appendix X, (Oyaid, 2010, 37 - 38), was adapted and was given to the students to establish their perceptions and attitudes towards ICT in the school environment, at what might be called a personal and systemic level. The answers provided by the students give us an insight into their opinions and beliefs around ICT, and in what way, if any, this influence their attitude to the TEL .

For the purposes of clarity the researcher has divided the questions into three subsets which show firstly, how the students perceive the effects of technology in learning; secondly, how they perceive aspects of technology which could be positive in their learning; and finally, how they perceive aspects of technology which could be negative in their learning. The questions allow for these possibilities although the students' answers may not perceive either an effect of technology, or whether something regarding technology is positive or negative in their learning.

The answers given by the students were used by the researcher to inform the makeup of the groups into which the students were divided for the TEL intervention as well as investigating the students' attitudes and perception of ICT which could have an effect on the efficacy of the TEL intervention on their literacy and information literacy skills. This grouping is in keeping with the findings in the literature about groups needing to include more able peers who in this instance would engage more, and assist others, with the technology aspect of the intervention.

Effects of Technology

The questions used in relation to the students' perceptions of the effects of technology on their learning are the following:

A. Lessons are more interesting when teachers use technology.

B. Having access to the internet helps me to do better work.

C. Computers have helped me produce projects I am proud of.

D. Computers make school work more enjoyable. (Oyaid, 2010, 37-38)

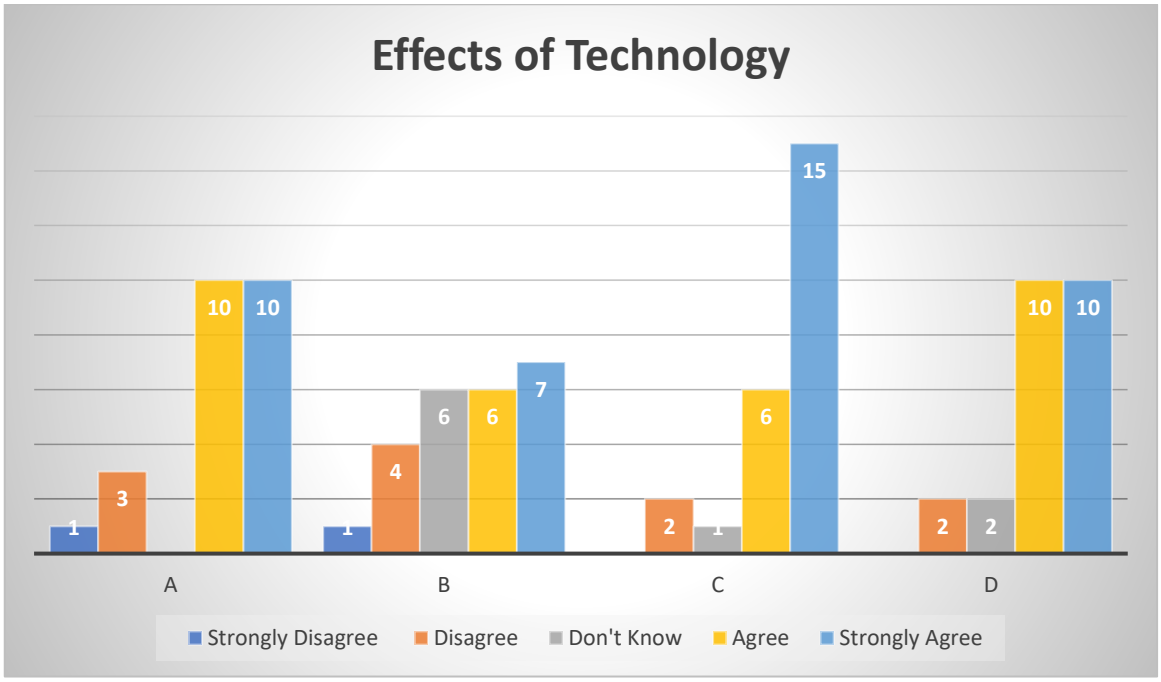

Figure 5.1 N=24. Effects of Technology.

There are 12 questions in this questionnaire and question one, 'Lessons are more interesting when teachers use technology' was the only one of the 12 asked, see Figure 5.1, in which nobody responded, 'Don't Know'. It seems that there is nobody indifferent to this matter. A clear majority of the group, 20 out of 24, or 83.3%, thought that lessons were more interesting when teachers used technology. This positive attitude is something that should be built upon. However, in the second question concerning the internet as a help toward doing better work it is notable that six students, 25% of the class group, did not know if it did so, and that a further five, 20.8%, did not think so to different degrees. Regarding the third questions in this subset 87.5% were overwhelmingly in agreement that technology has helped them to produce work about which they are proud, and in question four 83.3% think that doing so has been enjoyable.

Positive Perceptions of Technology

The questions used in relation to how students perceived technology positively in their learning are:

A. I am interested in learning about technology.

B. Students should use computers in their learning.

C. I feel I would work better at school if I had more access to computer facilities.

D. I would rather do my school work on a computer than by handwriting (22 of the 24 students answered this).

E. I prefer to use the computer for school work on my own. (Oyaid, 2010, 37-38)

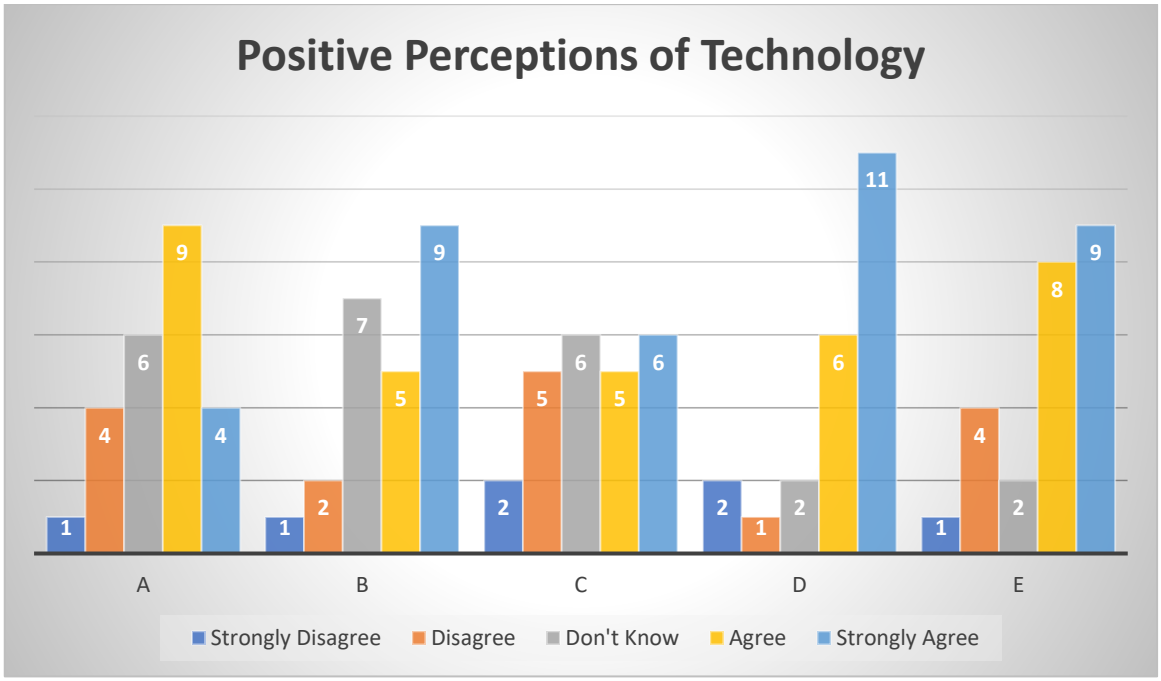

Figure 5.2 N=24 except where otherwise stated. Positive Perceptions of Technology

This set of questions looked at deepening knowledge around technology, and as well as future practice that the students would prefer which could be said to have a positive impact on their work. Many of the students, 54%, see Figure 5.2, are interested in learning more about technology with a further 25% who Don't Know. However, just over 20% do not want to learn more about technology.

Nearly 60% of students agree that students should use computers, almost 30% don't know and just over one in ten disagree. Interestingly in question three just under 30% do not think they would work better with greater access to technology, less than half, 45.8%, think they would, and 25% did not express a preference either way. This is a substantial number, just under three in ten, who do not perceive technology as enabling them to work better. This finding shows how some of the students think that the TEL

intervention will not help them in their learning, and perhaps also how they approach the TEL intervention in the first place. Concerning a move from handwriting to computer use most who answered, 62.9%, would prefer to do this. It is, as one of the students said in the focus groups, "*easier*".

However, in research which is premised on collaborative work 62.9% of students prefer to work alone. Only a little over 20% would prefer to work in groups. This could have an effect on the students' approach to the TEL intervention.

Negative Perceptions of Technology

The questions used in relation to how students might perceive technology negatively in their learning are:

A. Teachers put too much emphasis on using computers.

B. Using computers is boring.

C. I feel frustrated when I am using computers for school work. (Oyaid, 2010, 37-38)

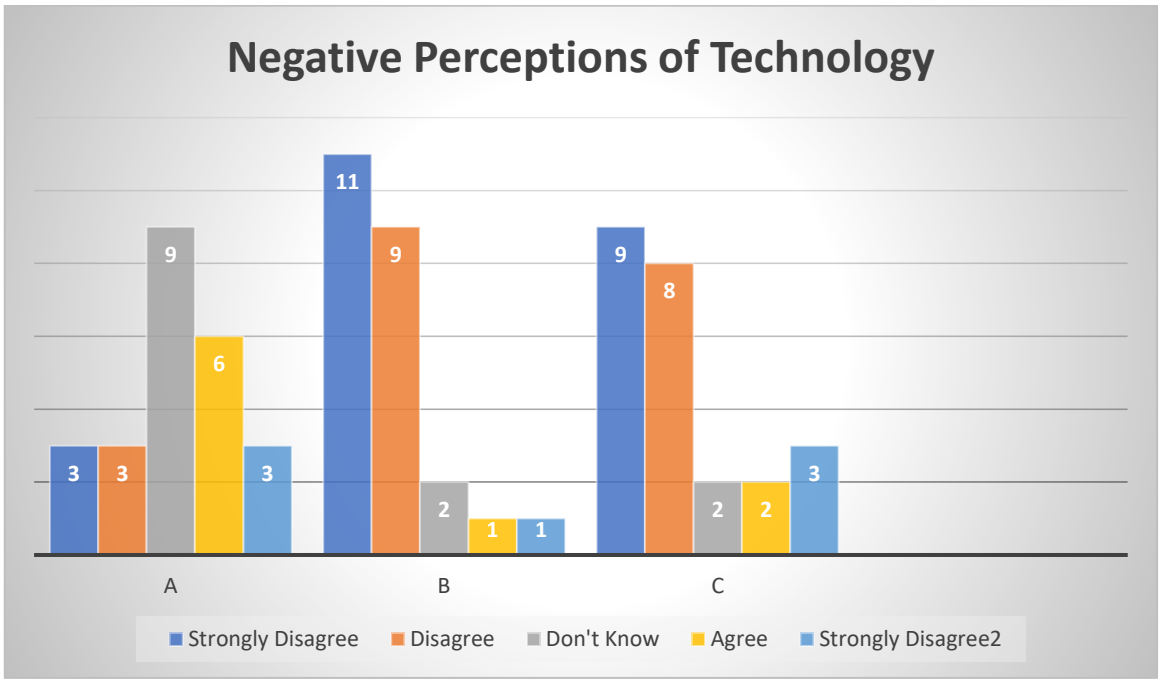

Figure 5.3 N=24. Negative Perceptions of Technology

In this final subset of questions within the questionnaire it allows for negative attitudes and perceptions of technology to emerge, particularly for those students who feel that it

is being foisted upon them. In question A the answer receiving the most responses, see Figure 5.3, was Don't Know, 37.5%. The same percentage thought that teachers put too much emphasis on using computers. Regarding Question B there was a clear majority of students, 83.3%, who do not think computers are boring. This is in keeping with earlier answers where students generally perceived technology and its effects positively. In the last question a majority, 62.9%, do not feel frustrated when using technology but there are a sizeable number who at 20.8% do.

In general, many of the class like to work with technology and believe that it helps them to do better work. However, there is a small minority, about one in five, who do not engage with technology in the same way, who perceive that there is too much of it in their learning, and that feelings of frustration emerge consequently. The researcher ensured that these students were placed in separate groups with the aim that their peers might help them overcome any dissatisfaction with technology they have.

5.3 Literacy Levels

It needs to be borne in mind that one of the primary aims of the research in this thesis is to assess the efficacy of a collaborative TEL intervention on the literacy skills of this group of students within the context of their religious education course. This raises concerns whether a Religious Education class is an appropriate forum for a TEL intervention. The current Religious Education Junior Certificate syllabus was released in 2000, toward the end of what was known as the 'dot-com bubble', and there is not a single mention of ICT (DES, 2000) beyond an email address and webpage for additional information. It is as if it does not exist for the classroom. In the following year, *Guidelines for Teachers* was published again with little acknowledgement of ICT except for two pages listing web sites which are particularly useful for "information" (DES, 2001, 90 – 91). There is no discussion of pedagogy involving ICT.

Shortly, "A new specification for Junior Cycle Religious Education will be introduced for first year students from September 2019 and assessed in 2022 for the first time" (NCCA, N.D.) as part of the changeover to the new Junior Cycle. The new Junior Cycle lists key skills for students: *Managing Myself, Staying Well, Communicating, Being Creative, Working with Others, and Managing Information and Thinking.* In these ICT forms a fundamental part where the expectation is that students should be and will be 'Using digital technology to manage myself and my learning; Using digital technology to communicate; Stimulating creativity using digital technology; Working with others

through digital technology; Using digital technology to access, manage and share content' (NCCA, 2012, 5). ICT is necessary to Religious Education classes and in a course which is ordinarily 'text heavy' it was hoped that a TEL intervention would influence the literacy and information skills of the students involved. It is, therefore, necessary to ascertain what literacy level that they have both before and after the TEL intervention.

In the literature review above discussion was made of several different definitions of literacy amongst which the PISA definition "understanding, using, reflecting on, and engaging with written texts in order to achieve one's goals, develop one's knowledge and potential, participate in society" (PISA, 2013, 61) is the one that the researcher believes more fully represents what literacy is because it places literacy as a fulcrum in our relational activity as an autonomous being in the world.

Every three years PISA carries out mathematics, reading, and science tests around the areas of literacy and problem solving to 15 year old students from its member and associate member countries and organisations. It is an internationally recognised test which acts as a standard by which a level may be accorded to those who take it. The researcher elected to give this test from two different years, 2006 and 2009 (see Appendices 5 and 6), to the class group before and after the TEL intervention to observe whether any changes had been achieved in the students' literacy levels. Given that the PISA test is an internationally recognised test it would appear to meet an acceptable objective standard by which to measure the students' literacy levels. Its own definition of literacy is one which the researcher is using in this study, which was a further reason to use previous tests that students had received. Contact was made with the Educational Research Council, who run the PISA test in Ireland, to establish the administration of the test. The researcher was informed that there are "15 questions for one 30-minute module" (G. Sheil, personal communication, 21st February 2017) which were thus given to the students. There was a change in the 2009 test compared to previous tests in that "the reading framework has been updated and now also includes the assessment of reading of electronic texts" (PISA 2009, 3), but still in a paper format which was followed in the administration of the tests in this research.

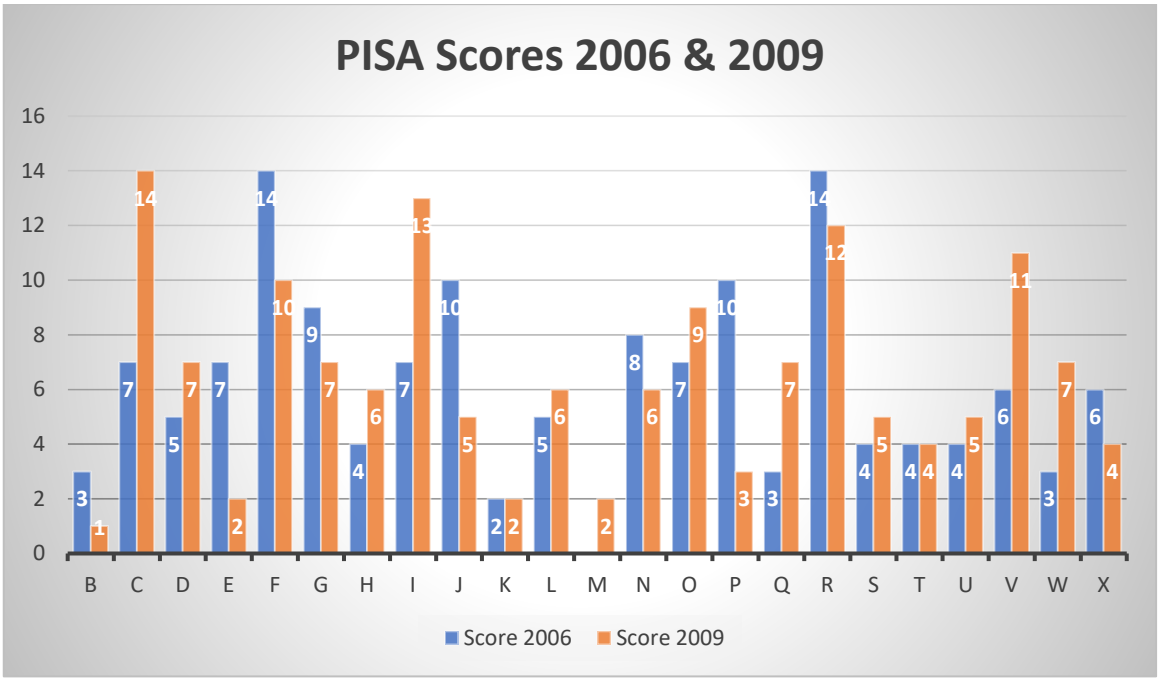

Figure 5.4 N=23. PISA Scores 2006 and 2009

There were 23 students who took both tests. The 2006 test was given before the TEL intervention began and the 2009 test was given after the TEL intervention two weeks later. Apart from the students' own use of ICT, and somewhat minimal school use in other classes, they had four hours dedicated to this TEL intervention in less than a school week, Thursday to Wednesday. The total number of marks per test paper for both years was 21. The values observed in Table 5.7 are marks out of 21.

It may be noted, see Figure 5.4 above, that two of the students, M and T, achieved the same score in both tests. Students C, D, H, I, L, M, O, Q, S, U, V, and W, 11 in total, achieved a higher score in the 2009 test following the TEL intervention, whereas students B, E, F, G, J, N, P, R, and X, nine in total, achieved a lower score in the 2009 test following the TEL intervention compared to the 2006 reading test.

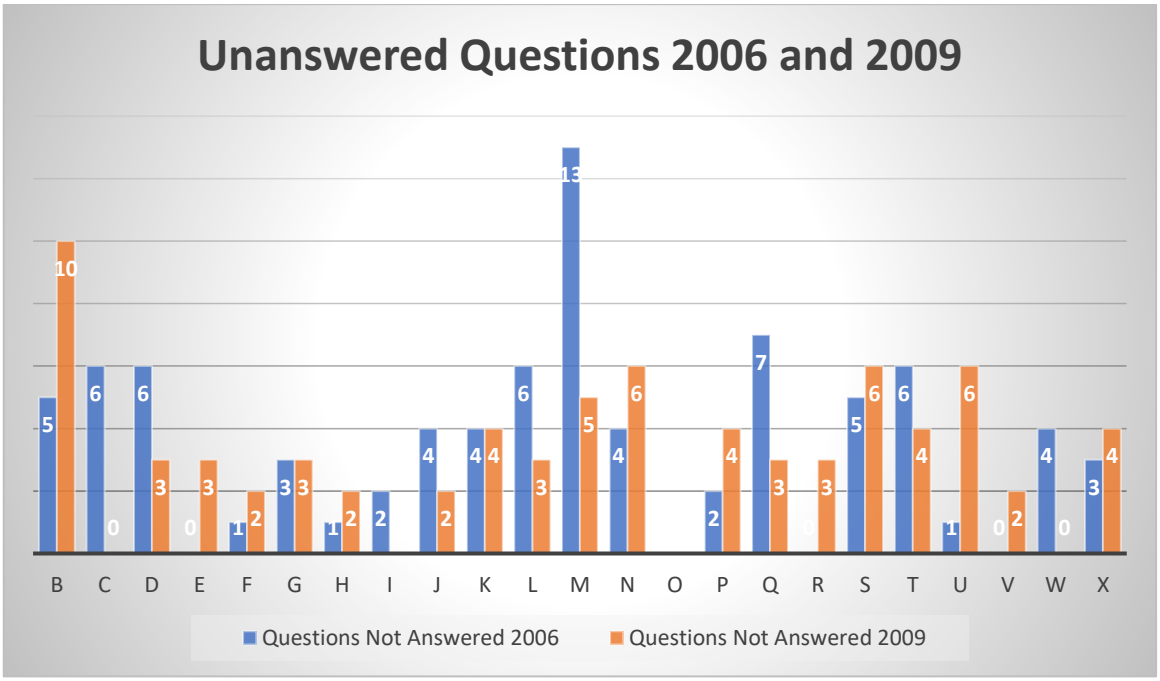

Figure 5.5 N=23. Unanswered Questions 2006 and 2009

The number of questions not answered by the students in the two tests was also assessed to see if there was a rise or fall in their capacity, or confidence to answer questions, following the TEL intervention. In Table 5.8 we can see that three students, G, K, and O answered the same number of questions in both tests. It may also be seen that nine students C, D, I, J, L, M, Q, T, and W answered more questions in the post-TEL intervention literacy test than in the pre-TEL intervention literacy test. On the other hand, there were 11 students B, E, F, H, N, P, R, S, U, V, and X who answered fewer questions in the post-TEL intervention literacy test than in the pre-TEL intervention literacy test.

A paired t test was conducted to test for differences in the mean scores between the 2006 and 2009 tests, see Figure 5.9 below, using the following website http://www.socscistatistics.com/tests/ttestdependent/Default.aspx .

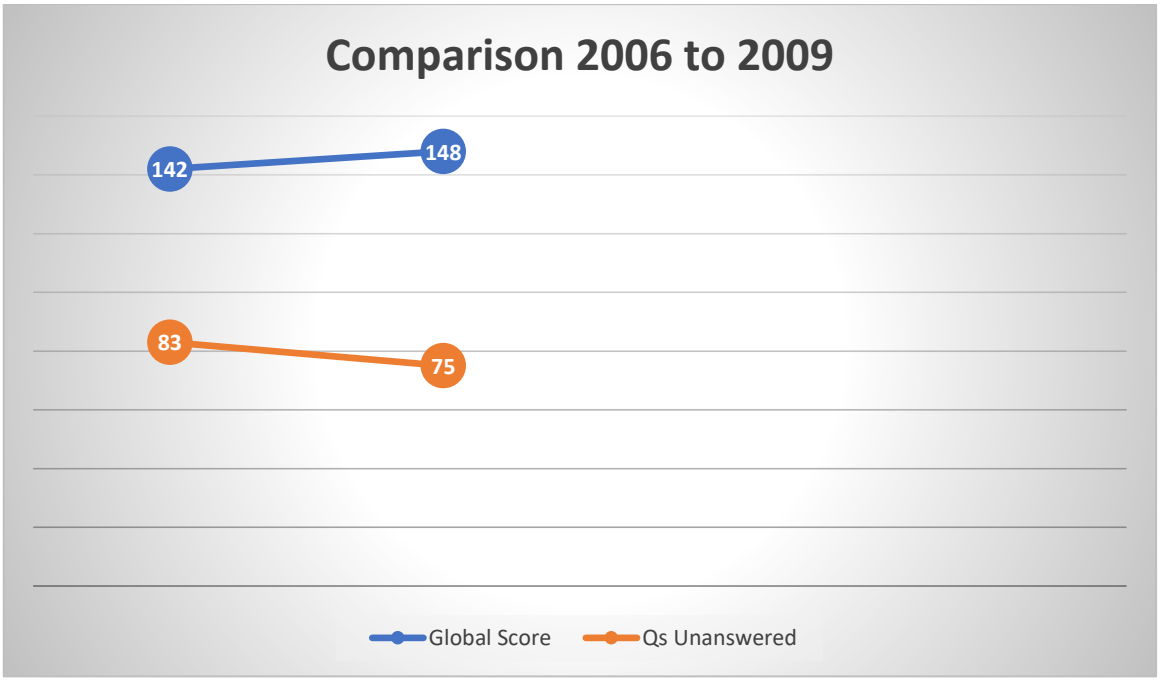

Figure 5.6 Comparison 2006 to 2009

The first paired t test compared the scores from the 2006 PISA test with the 2009 PISA test. The value of p was computed to be 0.735609. Hence the result is not significant at $p \leq 0.05$. There was no statistical difference between the means of the two sets of results.

The second t test compared the number of questions not answered from the 2006 PISA test with the number of questions not answered from the 2009 PISA test. The value of p was computed to be 0.620866. Hence the result is not significant at $p \leq 0.05$. There was no statistical difference between the mean of the questions not answered in the two sets of results.

In conclusion, there is no difference in the literacy levels of the students over the course of the TEL intervention using the PISA Reading tests as a barometer. Furthermore, the TEL intervention took place over a shorter period of time than was intended at the outset of the research. These findings will be analysed later in this chapter following a description of the focus group discussions with the students which was the last part of the research to take place.

5.4 Focus Groups

The researcher has elaborated this series of questions to ascertain what it is that the students think before having engaged in discussion with them. This process presupposes that it can "represent reality in an unambiguous way through an objective, unequivocal,

sure and rational procedure' but it could be said it is rather 'a question of researchers interpreting what they think they are seeing, in the light of their own unreflected frames of reference" (Alevesson & Sköldberg, 2000, 27). This process is an interpretive one and thus is subjective. It attempts to present the reality of what the girls said and what they might mean, but it cannot lay claim to the truth. It does not go so far, however, as Humpty Dumpty who said, "When I use a word … it means just what I choose it to mean – neither more nor less" (Carroll, 1872, 274). Meaning is something which we all have to share, and reach an accommodation around.

5.4.1 Themes

During the focus group interviews several different themes arose related to the TEL intervention which might have affected how it functioned as an exemplar of the Bridge21, social constructivist model. The interviews were transcribed by the researcher, read again and then coded. Coding is "the process of organizing the data by bracketing" text and "writing a word representing a category in the margins" (Creswell, 2014, 247). In this way, the themes can be seen in the discussions held with the students which will be outlined below.

Interpersonal Relationships

Working with others was something that caused a difficulty for some of the students. It was sometimes couched in terms of "*people weren't cooperating*" (This last was said staring at other students), or "*they thought it was boring and just wanted to go off and do their own thing."* But more often they thought it is "*harder to communicate with everyone because you're not used to talking to certain people*", "*the people in our group I don't really talk to*", "*They just didn't like the group they were in*." This wish to be in groups with people they know, or connect with, was felt to have affected their work negatively with some of the students saying that "*People not listening*", or "*Us not communicating*" were things they would change for the future. The solution suggested by the students was "*we should be able to pick our own people, and work with them*." However, some of them did recognise a problem with that because "*The thing is when you're with your friends you could get distracted, instead of really focusing on the task*." Occasionally, being in a group without their friends caused one student to engage in an action which she knew was counterproductive, "*It's a better way to get know everyone better. But sometimes it's also hard because you might just not want to be in that group and then it would make you slow down and you don't want to do it. That's*

what happened to me." The student shows awareness that being a group with others is "*a better way*", but that knowledge did not prevent her from disengaging from the group, and thus lessen her and perhaps the group's learning possibilities, particularly as she was one of the more able others.

The intervention was focussed on Religious Education but there were relatively few comments made about that content. One of the students speaking with long pauses and deep breaths lamented that they had not decided on the topic for any other reason than "*One of the girls decided it was good. And that we'd mostly know a lot about that. So, we decided on that one*." The tone of voice indicating that she had felt obliged to go along with that girl, and in this way interpersonal relationships and their manifestation affected the conduct of the group. Another student explained why she did not like the intervention by saying that "*I'm not really a religious person so I'm not interested in it*", which led another to say that it was for different reasons but the effect was the same, "*I'm just sick of religion because my mum is so religious – I'm not going to lie – but she makes us do Bible study every night. I'm done with religion. I can't handle it anymore."* In this instance, a relationship outside of the group could be said to have affected its conduct, or at least this student's approach to the intervention.

It can be seen from the above that the impact of personal relationships within the class had a profound effect on the engagement of the students with the TEL intervention. It could be possible that the process by which the groups were composed may have affected the outcome overall.

ICT and Distractions

All the students use different social media, for example, Bebo, Facebook, Instagram, Snapchat, Twitter, and YouTube were mentioned, mostly on their phones but also occasionally on their tablets. The number of messages that most students said they sent was at least 50 but most likely more daily. However, there was a feeling this led them to being distracted away from what they should be doing, "*I don't really like using computers because people get distracted, because I get distracted when I'm using computers."* This distraction was considered to come from the different social media they use, "*You're on a website that has something to do with school and a message from Snapchat just pops up. You try to swipe up but you click into it and then…"* which caused laughter (of recognition?) all round. There were others who preferred not to use

ICT because "*if people have their phones and computers in school people get distracted. They won't use it for what we need to use it for. It's the same when we get the laptops. People still mess on them even though we're meant to be doing projects*." Conversely there were suggestions to overcome this by using the school laptops, "*I'd rather it on a laptop because on a tablet people would go on to Snapchat or something. You can't do that on laptops*." In general, the students like using ICT but they are aware that it can lead them astray. Quite who or how that is to be avoided would need to be looked at. It could also explain why some of the girls were not entirely with the TEL intervention because it led to them, or their colleagues being distracted, whereas a book does not have these possibilities that a digital apparatus does.

The TEL Intervention

The TEL intervention was regarded by the students as a school project which to some extent had to be done and put to one side. This seems to have been more because of the way the researcher put the groups together aiming for mixed ability along with a more able peer along Vygotskian lines.

There were aspects that they liked, primarily using computers which is still relatively unusual for them, "*I think it was better using the computers*", or because of being "*On the computers instead of writing a lot*". Using the computers was seen as "*easier to learn from them, then just listening to someone talking about it*." It was also a way of working that they felt learnt "*more*". The website designed for the intervention "*was good*", and it helped "*keep everyone on task*" because otherwise "*you'd be confused*".

Considering the question of doing it again answers began with "*It was ok*", "*I kind of did like it*", and "*It was alright*" which seemed non-committal but when pressed further what would make it better is ""*If you worked with your friends*". Not alone the need to work with your friends but also how work practice in this situation is to be organised, "*I didn't really mind doing it but I felt we weren't really communicating. Having two computers was real difficult to communicate and find out what the other set was doing … It was hard cause they could be doing what you were doing and then you're going off and repeating yourself"*. There is a sense of frustration with the way the groups worked. The students seem reluctant to take charge of their group whether because it is a step for which they are not quite ready, or one that they feel the teacher should be organising.

Generalised classroom practice in which collaborative learning is relatively unusual could have had an impact on the TEL intervention.

Trust, Veracity and Authority

The question of whether a website can be trusted was a concern. The students said that they would check several different websites to see if the information was the same with "three" being the most typical number of sites that were checked. There was an acknowledgement that some of their strategies were not great when one student said, "*I just trust what I see*", which was greeted with laughter. Sometimes the appearance of a site made it believable, "*It depends if it's believable. How it's sold*." There was also a sense that some people simply know when something can be believed because of prior knowledge, "*A lot of stuff based on religion I know is true because I go to church*", or because of who they are, "*Some people have different beliefs. Some people believe everything they see. Some people are just so wise they'll be like, 'No'*."

Certain sites were trusted to search for information with Google being the most mentioned. Safari was also mentioned in this regard as was YouTube, "*When you don't how to do stuff you go on to YouTube and go 'How do you…".* On the other hand, sites to be avoided were those where "*too many ads that just pop up everywhere*", or more specifically Wikipedia which was mentioned by several of the groups, "*I wouldn't trust Wikipedia*" as "*It gives you the wrong information*" because on "*Wikipedia people can actually go on to it and edit. Cause I remember I clicked on something and I went on to editing, but I didn't mean to. And then I clicked enter and it came up what I wrote but it was like loads of Ls. So, I'd never trust Wikipedia*."

Authority to reassure the students when using a site was also vested in others, particularly those they know. Most of the groups mentioned "*family members to see if they know*" or more especially "*my parents*", "*You might ask your mam or dad have you heard of it*" or "*me ma*". This ties in with the questionnaire concerning the most important influences regarding right or wrong in which family was the most important influence. It is unsurprising that this is the same regarding assurances when going online. The students, as has been noted, are quite young and their lives are still centred about their family. Teachers were also mentioned occasionally, "*You just see it and check with the teacher the next day*". Reassurance was also received from what other

users of a site thought, "*You look at the reviews on them*" or from use "*ones that are already established like National Geographic. Ones that people already use*."

ICT and Necessity

Most of the students believe that ICT in school is a necessity. Some believe that regarding their learning "*Just using the computer … it's easier to learn from them. Then just listening to someone talking about it*", or "*It's just easier to do stuff on digital*." Another suggested that "*I think it's really important cause we have nine classes a day just writing … it just gets boring. And then kids turn off and decide to just not listen to that because we're bored. But if we had our phones out we'd be more interested in the subject*." However, not all agreed on the need for ICT for their learning, "*All the information is in our book*", "*I'd bring my book home with me*", or more specifically answering on the importance of ICT in history, "*No, 'cause it's mostly in our history books*". One student lamented to the researcher about having to work using ICT, "*I'm a book girl*".

During the TEL intervention, some fifth-year students asked if they could assist as they had a free class. Subsequently they noted how reluctant the students were to use ICT and to see the advantages it could offer, and they were quite surprised by that. They did offer the suggestion that they might have thought similarly prior to Transition Year (TY), but the use of ICT during TY together with visits to Bridge21 and experiencing that way of learning had changed their minds. Perhaps the assistance of a 'near peer', such as these fifth-years, during a future TEL intervention would be valuable.

However, regarding ICT as necessity for their future and how school might prepare them for that there was some disregard for that in one of the groups until one student said "*I think it is [necessary] because this generation now, everything is technology. You need to know how to use it if you want to get, to make … I don't even know what I'm saying anymore … If you want to make it in life*." It was fascinating how as she spoke the others in her focus group became quite rapt in what she said and she, in turn, became somewhat self-conscious. When she concluded, they nodded their heads adding "*Actually, I agree with you now*", "*But some jobs you need a computer for*", "*Like if you want to be a journalist*" after which there was laughter all round.

5.5 Discussion

The findings arising out of the research have been interesting insofar as they have raised more questions than have been answered. The researcher assumed that the students intrinsic and extrinsic motivation would be an aid toward achievement both in the TEL intervention as well as in ordinary school work. However, a few the students did not wish to use ICT for their learning because the information they needed was, they believed, contained within their textbooks, and there did not seem to be a reason to go beyond that. This would lead us to consider what it is that ICT is for in these students' opinions. Without a doubt, all engage in the digital world such as social media, and all revealed in conversation with the researcher that they use the internet to help with school work at least some of the time. However, when asked to formalise it some of them would rather use a textbook containing all the information they needed rather than engage with ICT. The students did recognise the task as having a relevance for their study of Religious Education and planning toward their journal, the website in itself kept them focussed on the goal to prepare a presentation on the topic area, but that did not especially affect how some regard ICT.

A further point which arose, and one that seems particularly relevant to this group of students, was the group dynamic and how that could affect the students' motivation to participate in a group which aims to construct knowledge out of peers being placed together and advantage being taken of this zone of proximal development (Vygotsky, 1978, 79). Again, not all students wished to do this or preferred to only be placed in groups with their friends. In the Bridge21 model it is expected that "The team is self-regulated and reaches decisions based on consensus" (Johnston et al, 2015, 427) but this was not the case with some of the groups here.

Concerning the work that the students produced there was not a great deal of depth to it but nor was that to be expected within the timeframe allowed. What was interesting was that regarding thinking about their learning all of the students evidenced some reflection on the process, but in some cases this had no bearing on what was discussed in the focus groups which seemed quite different. Perhaps, discussing difficulties about a process in a small group is easier than writing down the same difficulties. In most cases the presentation on the religion journal topic was copied and pasted from information found online. However, in a few cases the students began to put things into their own words, creating their own narrative, showing evidence of greater comprehension. What was

notable was that in all cases the information accessed by the students who used both the website created for the TEL intervention and other websites was reliable.

Finally, the main research question was to test the efficacy of this intervention on their literacy and information literacy skills. Regarding the latter there is, in general, an awareness of the need for caution when going online and working with what is found there. However, despite the website constructed as a model and reference to other websites together with literature which pointed toward ICT as an aid toward literacy, there was no discernible difference in attitudes which seemed to pre-exist about information literacy. The students did think that if something seemed particularly outrageous – an example given them was an airplane on Mars – they would identify it as not trustworthy, but information literacy is something that is given by the students, or identified by the students as the force of repetition from one website to another. There is in this a trust that if something is repeated enough then it must be true. A number of other factors were also considered by some of the students: ads on a website led to caution as did ability to edit on a website; online reviews and sites being already established led to acceptance.

In regard to a change in literacy levels there was no discernible difference from before to after the TEL intervention. This is disappointing but may be explained by several factors such as the length of the study, the relationships between the groups members, or the relatively low literacy level that a number of the students have.

In the following chapter conclusions shall be drawn from the main findings of the study, an assessment will be made regarding the research meeting the research questions, and an evaluation made for future work which could arise out of the conclusions.

6 Conclusion

The main research question that this study sought to investigate was the efficacy of a technologically enhanced learning (TEL) intervention on the literacy and information skills of a group of JCSP learners. Several other secondary research questions arose out of this: i). Do students who have used ICT more frequently display higher levels of improved literacy skills than they did before the TEL? ii) Do students who have used ICT more frequently experience or show improvement in their information literacy skills?

6.1 Answering the Research Questions

Looking at the findings there was no discernible change in the literacy levels of the students involved in the study. In general, it is not possible to say whether the TEL intervention has had either a positive, a negative, or indeed a neutral effect on the literacy skills of the students. There was some evidence in the work that the students produced during the TEL intervention that information accessed was reliable but it is not possible to say if the TEL intervention itself led to that. The reasons why are explored more fully in the next section.

6.2 Limitations of the Research

The limitations of the research are as follows:

Firstly, attention was drawn to the limited time in which the TEL intervention took place. It was less than was hoped for and any change would not have been possible in such a reduced time frame. It is possible that these limitations were inherent to the study as planned from the outset. The study itself was not extensive enough in the time over which it could be developed. It was simply too short. When this study began, the researcher was very much focussed on "achievement outcomes, … [on] desirable outcomes" (Walker, Shore & French, 2011, 124) which were an improvement in the literacy and information literacy skills of the participants through a Bridge21 TEL learning experience. However, from the findings it has been shown there was no discernible change. This may have been because the longitudinal aspect of the research was not sufficient.

Secondly, it may also have been due to the way that the group participants interacted with each other during the process which was something that they spoke about during

the focus group. The level of disquiet with some students about who they were placed with from their class was unexpected. Some resistance was expected by the researcher but not that it could almost cause some students to disengage. It may have affected the outcome to an extent. If the TEL intervention had had a longer time frame over which to run it might have been apposite to change the groups around. Consequently, the researcher has returned to the literature to see in what way that group composition and its interaction should have been considered at the outset.

Walker et al note that in focusing on the result "process variables are overlooked" (Walker, Shore & French, 2011, 124). In this research one such variable would be the way that the groups were put together. The researcher was intent to test the proposition that a TEL intervention could affect the students' literacy and information literacy skills and, perhaps, subsumed everything to this objective. They had been placed there by the researcher who wanted each group to have a more able peer both in religion, and enthusiasm in attitude and perception of ICT. The groups were also composed so that they were mixed ability, and in the case of one girl whose spoken English is weak she was placed with another girl with the same mother tongue. The researcher thought that that the zone of proximal development could be most effective in this environment. Other considerations, such as ability to use ICT was assumed because the researcher has worked with the students for nearly two years as a class teacher. However, this was not as developed as the researcher had assumed, or habits of use which the students engage in were not recognised by the researcher as potential difficulties. However, in the opinion of the researcher what surprised him was that some of the students did not engage fully in their group because they had not been placed with their friends. This was communicated in the focus groups not alone with what was said, but also with non-verbal signs, such as looking around to ensure no-one was listening, or throwing eyes up to heaven, together with pregnant pauses full of innuendo and meaning. The researcher believes that together with the duration of the research, which may have influenced the outcome of the study, the groups' dynamics may also have played a part in the outcome.

Prior to the intervention beginning the researcher had explained to the students the criteria and reasons behind the divisions of the groups. However, perhaps through greater discussion the students' feelings around this might have emerged and could have been dealt with more adequately because "cooperative learning must address both the

process and the outcome" (ibid). It has also been noted that "groups of learners who were friends rather than acquaintances found it easier to expose their views and to challenge each other" (Robinson, Harrison, and Burton, 2015, 12) but during the TEL intervention "the group put the social harmony of the group before their need to develop cognitive strategies" (Robinson, Harrison, and Burton, 2015, 12). Once back in the comfort of their group of friends they could more comfortably explain the difficulties that they had had with the groups' make up rather than at the time confront those who they felt were being "'free-riders'" or taking them for "'suckers'" (Walker, Shore, and French, 2011, 122). This was despite a charter or set of rules being drawn up by the groups at the outset of the TEL intervention which could have been referred to in precisely these circumstances. It is possible that the researcher could have intervened more radically, but as noted earlier in the study this would have been a return to a "traditional, pre-Piagetian way of teaching" (Verenikina, 2008, 162), which would have been "inconsistent with the goal of creating a learning environment that self-organizes, and instead re-establishes a classical teaching situation within which the role of the teacher is to deliver knowledge rather than to facilitate learning" (Hermann, 2015, 210). Consequently, the role of the researcher during the TEL intervention was to observe and talk with those who seemed to be not participating fully, gently pressuring rather than coercing students into action.

In the title of this study it is noted that the students are JCSP students. It has been noted that such students present with varying difficulties, although not all students in the class would have them. The researcher considered that the challenges experienced with this JCSP group during the TEL intervention fit their profile in which the students "have serious difficulties with basic skills, including literacy and numeracy, that interfere with their ability to cope with the normal demands of school and of everyday life" (DES, 21, 2005). It is with their social peers that these learners ought to be placed in as far as it better enables them to work and participate in group learning with "confidence and [ease of] communication" (Robinson, Harrison, and Burton, 2015, 21).

Finally, the duration of the ethical approval process had an impact on the research. The time available following receipt of ethical approval was too short, and it is hoped that it can be improved for future researchers.

6.3 Recommendations for Future Study

The ambitions of the research to see the changes that could be wrought in the literacy and information skills of the students through a TEL intervention would need to be assessed over a substantially longer period of intervention in any future research. A 'quick fix' in this manner is simply not going to happen. The answer to the research questions whether positive, negative, or no effect would need to be conducted over a more properly time-resourced period to investigate these research questions fully. Or at least a period in which this feeling of disappointment about the research would not prevail. One short intervention like this is unlikely to have any impact, and it is desired that research should have the chance to be meaningful.

Another area of future research would be to investigate the extent to which group dynamics can be affected by antipathies or sympathies, especially those of young learners in this context. This is especially important because of the emphasis in 21st Century learning on collaborative and cooperative learning. Group work in its different facets, synchronous or asynchronous, is an increasingly important model of learning and needs full investigation in, for example, how it works in the short-term and in the long-term.

Literacy and information literacy skills are fundamental to the social context in which we live and could be affected in ways, not yet fully understood, by the predominant use of ICT today. Research in this area is both necessary and prescient.

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Appendices

Appendix 1 Junior Cert RE Journal Topics

Prescribed Titles for Religious Education Journal Work for the Junior Certificate Examination 2018

Two titles are given for each section of the syllabus. Candidates are required to submit journal work on **one title only**. Candidates may select any one from the following list of journal work titles:

Section A. Communities of Faith

a. 1. An exploration of the need for a variety of roles, including the leader's role, within either a Church or Religious Order in Ireland today.

a. 2. A case study on the ways that a calling to serve is involved in a vocation within **one** community of faith in Ireland today.

Section B. Foundations of Religion – Christianity

b. 1. An investigation into the reasons why Jesus of Nazareth came into conflict during his life, with the religious and political authorities in Palestine.

b. 2. A study of what Jesus taught through his miracles about the treatment of sinners and other outsiders in the Kingdom of God.

Section C. Foundations of Religion – Major World Religions

c. 1. □ BUDDHISM □ HINDUISM □ ISLAM □ JUDAISM

In the history of world religions there are key moments that shape their development.

A profile of the way in which **one** of the above world religions has been shaped by the experience of either persecution or schism.

c. 2. A study of how religious belief is expressed in the main features of a place of prayer associated with **one** of the following world religions: Buddhism, Hinduism, Islam or Judaism.

State Examination Commission S91/16 https://www.examinations.ie/misc-doc/EN-EX-62792047.pdf

Appendix 2 Survey concerning Students' Religious Make-up and Level of Participation

Each question is optional. Feel free to omit a response to any question; however, the researcher would be grateful if all questions are responded to. Please do not name third parties in any open text field of the questionnaire. Any such replies will be anonymised.

1. What is your religion?

Mark one box only

	Church of Ireland
	Islam
	No religion
	Orthodox
	Presbyterian
	Roman Catholic
	Other, write in your religion below, one letter per box

Adapted from CSO Census 2016 (http://www.cso.ie/en/media/csoie/census/census2016/2016censusforms/65995_English_Household_2016_New_Version_Do_Not_Complete.pdf)

2. In order of importance please rank the following which influences you most when deciding if something is right or wrong. 1 is the most important and 7 is the least important.

	Community
	Family
	Friends
	Religion
	School
	Social Media
	Other, write in below

If you marked one of the boxes about religion in question 1 please answer the following question

3. How often do you practise your religion?

Mark one box only

	Daily
	Weekly
	Monthly
	Yearly
	Special Occasions
	Never

Appendix 3 How you feel about using ICT

Each question is optional. Feel free to omit a response to any question; however the researcher would be grateful if all questions are responded to.

Please do not name third parties in any open text field of the questionnaire. Any such replies will be

anonymised

	Strongly disagree	Disagree	Don't know	Agree	Strongly Agree
Lessons are more interesting when teachers use technology					
Having access to the internet helps me to do better work					
I am interested in learning about technology					
Computers have helped me produce projects I am proud of					
Students should use computers in their learning					
I feel I would work better at school if I had more access to computer facilities					
Computers make school work more enjoyable					
Teachers put too much emphasis on using computers					
I would rather do my school work on a computer than by handwriting					
Using computers is boring					
I feel frustrated when I am using computers for school work					
I prefer to use the computer for school work on my own					

(Adapted from Oyaid, A.A., (2010) Secondary Students' Perception of Information and Communication Technology and their Usage of it Inside and Outside of School in Riyadh City, Saudi Arabia, International Journal of Applied Education Studies, Vol 7, No 1, 27-42)

Appendix 4 Ethical Approval

Coláiste Bríde Board of Management Approval

• I understand that students' data will be stored securely and deleted on completion of the study (by 31st August 2017).

• I understand that the study involves viewing a computer screen and that if a student or anyone in their family has a history of epilepsy then he/she is proceeding at his/her own risk.

• I have received a copy of this agreement.

• I have received copies of the following: Letter to parents, Information sheet for parents, Information Sheet for students, Consent form for parents, and Assent form for students.

I [signature], on behalf of the Board of Management of Coláiste Bríde Clondalkin Presentation Secondary School give consent for the research to be carried out.

Signature: [signature] Date: 24/03/17.

Signature of project leader (TCD): [signature] Date: 24/03/2017

Statement of investigator's responsibility:

I have explained the nature and purpose of this research study, the procedures to be undertaken and any risks that may be involved. I have offered to answer any questions and fully answered such questions. I believe that the participant understands my explanation and has freely given informed consent. I undertake to act in accordance with the information supplied.

TCD REC Approval

TCD REC WebApp: The status of 'An assessment of the efficacy of a collaborative technological intervention on the literacy and information literacy skills of a group of JCSP students' (208) has been updated by the Committee SCSS/Thesis 2017/Ethics Application x

rec-app-help@tchpc.tcd.ie 22 Mar

to me

The status of 'An assessment of the efficacy of a collaborative technological intervention on the literacy and information literacy skills of a group of JCSP students' has been updated by the Committee.

Title: 'An assessment of the efficacy of a collaborative technological intervention on the literacy and information literacy skills of a group of JCSP students'
Applicant Name: Collins Montgomery
Submitted by: Collins Montgomery
Academic Supervisor: Sharon Kearney
Application Number: 20170107

Result of the REC Meeting: Approved

The Feedback from the Committee is as follows:
All issues have now been addressed and this project may proceed.

The application can be viewed here:

https://webhost.tchpc.tcd.ie/research_ethics/?q=node/208

If amendments are required, please use the following link to edit the application and upload the changes:

Appendix 5 PISA Reading Test 2006

2006 Reading Test - http://www.oecd.org/pisa/38709396.pdf

R077: Flu

ACOL VOLUNTARY FLU IMMUNISATION PROGRAM
As you are no doubt aware the flu can strike rapidly and extensively during winter. It can leave its victims ill for weeks.

The best way to fight the virus is to have a fit and healthy body. Daily exercise and a diet including plenty of fruit and vegetables are highly recommended to assist the immune system to fight this invading virus.

ACOL has decided to offer staff the opportunity to be immunised against the flu as an additional way to prevent this insidious virus from spreading amongst us. ACOL has arranged for a nurse to administer the immunisations at ACOL, during a half-day session in work hours in the week of May 17. This program is free and available to all members of staff.

Participation is voluntary. Staff taking up the option will be asked to sign a consent form indicating that they do not have any allergies, and that they understand they may experience minor side effects.

Medical advice indicates that the immunisation does not produce influenza. However, it may cause some side effects such as fatigue, mild fever and tenderness of the arm.

WHO SHOULD BE IMMUNISED?

Anyone interested in being protected against the virus.

This immunisation is especially recommended for people over the age of 65. But regardless of age, ANYONE who has a chronic debilitating disease, especially cardiac, pulmonary, bronchial or diabetic conditions.

In an office environment ALL staff are at risk of catching the flu.

WHO SHOULD NOT BE IMMUNISED?
Individuals hypersensitive to eggs, people suffering from an acute feverish illness and pregnant women.

Check with your doctor if you are taking any medication or have had a previous reaction to a flu injection.

If you would like to be immunised in the week of May 17 please advise the personnel officer, Fiona McSweeney, by Friday May 7. The date and time will be set according to the availability of the nurse, the number of participants and the time convenient for most staff. If you would like to be immunised for this winter but cannot attend at the arranged time please let Fiona know. An alternative session may be arranged if there are sufficient numbers.

For further information please contact Fiona on ext. 5577.

.

Enjoy

Good Health

ACOL VOLUNTARY FLU IMMUNISATION PROGRAM

Fiona McSweeney, the personnel officer at a company called ACOL, prepared the information sheet on the previous two pages for ACOL staff. Refer to the information sheet to answer the questions which follow.

Question 1: FLU

Which one of the following describes a feature of the ACOL flu immunisation program?

A Daily exercise classes will be run during the winter.

B Immunisations will be given during working hours.

C A small bonus will be offered to participants.

D A doctor will give the injections.

Question 2: FLU

We can talk about the content of a piece of writing (what it says).

We can talk about its style (the way it is presented).

Fiona wanted the style of this information sheet to be friendly and encouraging.

Do you think she succeeded?

Explain your answer by referring in detail to the layout, style of writing, pictures or other graphics.

.....

.....

.....

Question 3: FLU

This information sheet suggests that if you want to protect yourself against the flu virus, a flu injection is

A more effective than exercise and a healthy diet, but more risky.

B a good idea, but not a substitute for exercise and a healthy diet.

C as effective as exercise and a healthy diet, and less troublesome.

D not worth considering if you have plenty of exercise and a healthy diet.

Question 4: FLU

Part of the information sheet says:

WHO SHOULD BE IMMUNISED? Anyone interested in being protected against the virus.

After Fiona had circulated the information sheet, a colleague told her that she should have left out the words "Anyone interested in being protected against the virus" because they were misleading.

Do you agree that these words are misleading and should have been left out?

Explain your answer.

.....

.....

.....

.....

Question 5: FLU

According to the information sheet, which one of these staff members should contact Fiona?

A Steve from the store, who does not want to be immunised because he would rather rely on his natural immunity.

B Julie from sales, who wants to know if the immunisation program is compulsory.

C Alice from the mailroom who would like to be immunised this winter but is having a baby in two months.

D Michael from accounts who would like to be immunised but will be on leave in the week of May 17.

R081: Graffiti

I'm simmering with anger as the school wall is cleaned and repainted for the fourth time to get rid of graffiti. Creativity is admirable but people should find ways to express themselves that do not inflict extra costs upon society.

Why do you spoil the reputation of young people by painting graffiti where it's forbidden? Professional artists do not hang their paintings in the streets, do they? Instead they seek funding and gain fame through legal exhibitions.

In my opinion buildings, fences and park benches are works of art in themselves. It's really pathetic to spoil this architecture with graffiti and what's more, the method destroys the ozone layer. Really, I can't understand why these criminal artists bother as their "artistic works" are just removed from sight over and over again.

Helga

There is no accounting for taste. Society is full of communication and advertising. Company logos, shop names. Large intrusive posters on the streets. Are they acceptable? Yes, mostly. Is graffiti acceptable? Some people say yes, some no.

Who pays the price for graffiti? Who is ultimately paying the price for advertisements? Correct. The consumer.

Have the people who put up billboards asked your permission? No. Should graffiti painters do so then? Isn't it all just a question of communication – your own name, the names of gangs and large works of art in the street?

Think about the striped and chequered clothes that appeared in the stores a few years ago. And ski wear. The patterns and colours were stolen directly from the flowery concrete walls. It's quite amusing that these patterns and colours are accepted and admired but that graffiti in the same style is considered dreadful. Times are hard for art.

Sophia

Question 1: GRAFFITI

The purpose of each of these letters is to

A explain what graffiti is.

B present an opinion about graffiti.

C demonstrate the popularity of graffiti.

D tell people how much is spent removing graffiti.

Question 2: GRAFFITI

Why does Sophia refer to advertising?

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Question 3: GRAFFITI

Which of the two letter writers do you agree with? Explain your answer by using your own words to refer to what is said in one or both of the letters.

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Question 4: GRAFFITI

We can talk about what a letter says (**its content**).

We can talk about the way a letter is written (**its style**).

Regardless of which letter you agree with, in your opinion, which do you think is the better letter? Explain your answer by referring to the way one or both letters are written.

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R109: A Just Judge

Refer to the story A Just Judge, which starts on the next page, to answer the questions which follow it.

A JUST JUDGE

An Algerian king named Bauakas wanted to find out whether or not it was true, as he had been told, that in one of his cities lived a just judge who could instantly discern the truth, and from whom no rogue was ever able to conceal himself. Bauakas exchanged clothes with a merchant and went on horseback to the city where the judge lived.

At the entrance to the city a cripple approached the king and begged alms of him. Bauakas gave him money and was about to continue on his way, but the cripple clung to his clothing.

"What do you wish?" asked the king. "Haven't I given you money?"

"You gave me alms," said the cripple, "now grant me one favour. Let me ride with you as far as the city square, otherwise the horses and camels may trample me."

Bauakas sat the cripple behind him on the horse and took him as far as the city square. There he halted his horse, but the cripple refused to dismount.

"We have arrived at the square, why don't you get off?" asked Bauakas.

"Why should I?" the beggar replied. "This horse belongs to me. If you are unwilling to return it, we shall have to go to court."

Hearing their quarrel, people gathered around them shouting:

"Go to the judge! He will decide between you!"

Bauakas and the cripple went to the judge. There were others in court, and the judge called upon each one in turn. Before he came to Bauakas and the cripple he heard a scholar and a peasant. They had come to court over a woman: the peasant said she was his wife, and the scholar said she was his. The judge heard them both, remained silent for a moment, and then said:

"Leave the woman here with me, and come back tomorrow."

When they had gone, a butcher and an oil merchant came before the judge. The butcher was covered with blood, and the oil merchant with oil. In his hand the butcher held some money, and the oil merchant held onto the butcher's hand.

"I was buying oil from this man," the butcher said, "and when I took out my purse to pay him, he seized me by the hand and tried to take all my money away from me. That

is why we have come to you—I holding onto my purse, and he holding onto my hand. But the money is mine, and he is a thief."

Then the oil merchant spoke. "That is not true," he said. "The butcher came to me to buy oil, and after I had poured him a full jug, he asked me to change a gold piece for him. When I took out my money and placed it on a bench, he seized it and tried to run off. I caught him by the hand, as you see, and brought him here to you."

The judge remained silent for a moment, then said: "Leave the money here with me, and come back tomorrow."

When his turn came, Bauakas told what had happened. The judge listened to him, and then asked the beggar to speak.

"All that he said is untrue," said the beggar. "He was sitting on the ground, and as I rode through the city he asked me to let him ride with me. I sat him on my horse and took him where he wanted to go. But when we got there he refused to get off and said that the horse was his, which is not true."

The judge thought for a moment, then said, "Leave the horse here with me, and come back tomorrow."

The following day many people gathered in court to hear the judge's decisions.

First came the scholar and the peasant.

"Take your wife," the judge said to the scholar, "and the peasant shall be given fifty strokes of the lash."

The scholar took his wife, and the peasant was given his punishment.

Then the judge called the butcher.

"The money is yours," he said to him. And pointing to the oil merchant he said: "Give him fifty strokes of the lash."

He next called Bauakas and the cripple.

"Would you be able to recognise your horse among twenty others?" he asked Bauakas.

"I would," he replied.

"And you?" he asked the cripple.

"I would," said the cripple.

"Come with me," the judge said to Bauakas.

They went to the stable. Bauakas instantly pointed out his horse among the twenty others. Then the judge called the cripple to the stable and told him to point out the horse. The cripple recognised the horse and pointed to it. The judge then returned to his seat.

"Take the horse, it is yours," he said to Bauakas. "Give the beggar fifty strokes of the lash."

When the judge left the court and went home, Bauakas followed him.

“What do you want?” asked the judge. “Are you not satisfied with my decision?”

“I am satisfied,” said Bauakas. “But I should like to learn how you knew that the woman was the wife of the scholar, that the money belonged to the butcher, and that the horse was mine and not the beggar’s.”

“This is how I knew about the woman: in the morning I sent for her and said: ‘Please fill my inkwell.’ She took the inkwell, washed it quickly and deftly, and filled it with ink; therefore it was work she was accustomed to. If she had been the wife of the peasant she would not have known how to do it. This showed me that the scholar was telling the truth.

“And this is how I knew about the money: I put it into a cup full of water, and in the morning I looked to see if any oil had risen to the surface. If the money had belonged to the oil merchant it would have been soiled by his oily hands. There was no oil on the water; therefore, the butcher was telling the truth.

“It was more difficult to find out about the horse. The cripple recognised it among twenty others, even as you did. However, I did not take you both to the stable to see which of you knew the horse, but to see which of you the horse knew. When you approached it, it turned its head and stretched its neck toward you; but when the cripple touched it, it laid back its ears and lifted one hoof. Therefore I knew that you were the horse’s real master.”

Then Bauakas said to the judge: “I am not a merchant, but King Bauakas, I came here in order to see if what is said of you is true. I see now that you are a wise judge. Ask whatever you wish of me, and you shall have it as reward.”

“I need no reward,” replied the judge. “I am content that my king has praised me.”

Question 1: JUST JUDGE

Near the beginning of the story we are told that Bauakas exchanged clothes with a merchant. Why didn't Bauakas want to be recognised?

A He wanted to see if he would still be obeyed when he was an “ordinary” person.

B He planned to appear in a case before the judge, disguised as a merchant.

C He enjoyed disguising himself so he could move about freely and play tricks on his subjects.

D He wanted to see the judge at work in his usual way, uninfluenced by the presence of the king.

Question 2: JUST JUDGE

How did the judge know that the woman was the wife of the scholar?

A By observing her appearance and seeing that she did not look like a peasant’s wife.

B By the way the scholar and the peasant told their stories in court.

C By the way she reacted to the peasant and the scholar in court.

D By testing her skill in work that she needed to perform for her husband.

Question 3: JUST JUDGE

Do you think it was fair of the judge to give the SAME punishment for all the crimes? Explain your answer, referring to similarities or differences between the three cases in the story.

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Question 4: JUST JUDGE

What is this story mainly about?

A Major crimes.

B Wise justice.

C A good ruler.

D A clever trick.

Question 5: JUST JUDGE

For this question you need to compare law and justice in your country with the law and justice shown in the story.

In the story crimes are punished under the law. What is another way in which law and justice in your country are SIMILAR to the kind of law and justice shown in this story?

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In the story the judge gives fifty strokes of the lash for all the crimes. Apart from the kind of punishment, what is one way in which law and justice in your country are DIFFERENT to the kind of law and justice shown in this story?

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Question 6: JUST JUDGE

Which one of the following best describes this story?

A A folk tale.

B A travel story.

C An historical account.

D A tragedy.

E A comedy.

Appendix 6 PISA Reading Test 2009

PISA 2009 Print Reading Sample Questions -
http://www.erc.ie/documents/pisa2009main_nationalreport.pdf

PRINT READING PASSAGE 1: Telecommuting

The way of the future

Just imagine how wonderful it would be to 'telecommute'[1] to work on the electronic highway, with all your work done on a computer or by phone! No longer would you have to jam your body into crowded buses or trains or waste hours and hours travelling to and from
work. You could work wherever you want to –just think of all the job opportunities this would open up! – *Molly*

Disaster in the making

Cutting down on commuting hours and reducing the energy consumption involved is obviously a good idea. But such a goal should be accomplished by improving public transportation or by ensuring that workplaces are located near where people live. The ambitious idea that telecommuting should be part of everyone's way of life will only lead people to become more and more self - absorbed. Do we really want our sense of being part of a community to deteriorate even further? – *Richard*

Telecommuting - Question 1
What is the relationship between 'The way of the future' and 'Disaster in the making'?

A - They use different arguments to reach the same general conclusion.
B- They are written in the same style but they are about completely different topics.
C - They express the same general point of view, but arrive at different conclusions.
D - They express opposing points of view on the same topic.

Telecommuting – Question 2
What is one kind of work for which it would be difficult to telecommute? Give a reason for your answer.

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Telecommuting – Question 3
Which statement would both Molly and Richard agree with?

[1] 'Telecommuting' is a term coined by Jack Nilles in the early 1970s to describe a situation in which workers work on a computer away from a central office (for example, at home) and transmit data and documents to the central office via telephone lines.

A - People should be allowed to work for as many hours as they want to.
B - It is not a good idea for people to spend too much time getting to work.
C - Telecommuting would not work for everyone.
D - Forming social relationships is the most important part of work.

PRINT READING PASSAGE 2: Mobile Phone Safety

Are mobile phones dangerous?

Key Points	Yes	No
Conflicting reports about the health risks of mobile phones appeared in the late 1990s.	1. Radio waves given off by mobile phones can heat up body tissue, having damaging effects.	1. Radio waves are not powerful enough to cause heat damage to the body.
	2. Magnetic fields created by mobile phones can affect the way that your body cells work.	2. The magnetic fields are incredibly weak, and so unlikely to affect cells in our body.
	3. People who make long mobile phone calls sometimes complain of fatigue, headaches, and loss of concentration.	3. These effects have never been observed under laboratory conditions and may be due to other factors in modern lifestyles.
Millions of euro have now been invested in scientific research to investigate the effects of mobile phones.	4. Mobile phone users are 2.5 times more likely to develop cancer in areas of the brain adjacent to their phone ears.	4. Researchers admit it's unclear this increase is linked to using mobile phones.
	5. The International Agency for Research on Cancer found a link between childhood cancer and power lines. Like mobile phones, power lines also emit radiation.	5. The radiation produced by power lines is a different kind of radiation, with much more energy than that coming from mobile phones.
	6. Radio frequency waves similar to those in mobile phones altered the gene expression in nematode worms.	6. Worms are not humans, so there is no guarantee that our brain cells will react in the same way.

If you use a mobile phone …

Key Points	Do	Don't
Given the immense numbers of mobile phone users, even small adverse effects on health could have major public health implications	Keep the calls short.	Don't use your mobile phone when the reception is weak, as the phone needs more power to communicate with the base station, and so the radio-wave emissions are higher.
In 2000, the Stewart Report (a British report) found no known health problems caused by mobile phones, but advised caution, especially among the young, until more research was carried out. A further report in 2004 backed this up.	Carry the mobile phone away from your body when it is on standby.	Don't buy a mobile phone with a high 'SAR' value[2]. This means that it emits more radiation.
	Buy a mobile phone with a long 'talk time'. It is more efficient, and has less powerful emissions.	Don't buy protective gadgets unless they have been independently tested.

SAR (specific absorption rate) is a measurement of how much electromagnetic radiation is absorbed by body tissue whilst using a mobile phone.

Mobile Phone Safety – Question 1
What is the purpose of the **Key Points**?

A - To describe the dangers of using mobile phones.
B - To suggest that debate about mobile phone safety is ongoing.
C - To describe the precautions that people who use mobile phones should take.
D - To suggest that there are no known health problems caused by mobile phones.

Mobile Phone Safety – Question 2
'It is difficult to prove that one thing has definitely caused another.'
What is the relationship of this piece of information to the Point 4 **Yes** and **No** statements in the table Are mobile phones dangerous?

A - It supports the Yes argument but does not prove it.
B - It proves the Yes argument.
C - It supports the No argument but does not prove it.
D - It shows that the No argument is wrong.

Mobile Phone Safety – Question 3
Look at Point 3 in the **No** column of the table. In this context, what might one of these 'other factors' be? Give a reason for your answer.

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Mobile Phone Safety – Question 4
Look at the table with the heading **If you use a mobile phone ...**Which of these ideas is the table based on?

A - There is no danger involved in using mobile phones.
B - There is a proven risk involved in using mobile phones.
C - There may or may not be danger involved in using mobile phones, but it is worth taking precautions.
D - There may or may not be danger involved in using mobile phones, but they should not be used until we know for sure.
E - The **Do** instructions are for those who take the threat seriously, and the **Don't** instructions are for everyone else.

PRINT READING PASSAGE 3: The Play's the Thing

Takes place in a castle by the beach in Italy.

FIRST ACT

Ornate guest room in a very nice beachside castle. Doors on the right and left. Sitting room set in the middle of the stage: couch, table, and two armchairs. Large windows at the back. Starry night. It is dark on the stage. When the curtain goes up we hear men conversing loudly behind the door on the left. The door opens and three tuxedoed gentlemen enter. One turns the light on immediately. They walk to the centre in silence and stand around the table. They sit down together, Gál in the armchair to the left, Turai in the one on the right, Ádám on the couch in the middle. Very long, almost awkward silence. Comfortable stretches. Silence. Then:

GÁL

Why are you so deep in thought?

TURAI

I'm thinking about how difficult it is to begin a play. To introduce all the principal characters in the beginning, when it all starts.

ÁDÁM

I suppose it must be hard.

TURAI

It is devilishly hard. The play starts. The audience goes quiet. The actors enter the stage **(5)** and the torment begins. It's an eternity, sometimes as much as a quarter of an hour before the audience finds out who's who and what they are all up to.

GÁL

Quite a peculiar brain you've got. Can't you forget your profession for a single minute?

TURAI

That cannot be done.

GÁL

Not half an hour passes without you discussing theatre, actors, plays. There are other **(10)** things in this world.

TURAI

There aren't. I am a dramatist. That is my curse.

GÁL

You shouldn't become such a slave to your profession.

TURAI

If you do not master it, you are its slave. There is no middle ground. Trust me, it's no joke starting a play well. It is one of the toughest problems of stage mechanics. Introducing **(15)** your characters promptly. Let's look at this scene here, the three of us. Three gentlemen in tuxedoes. Say they enter not this room in this lordly castle, but rather a stage, just when a play begins. They would have to chat about a whole lot of uninteresting topics until it came out who we are. Wouldn't it be much easier to start all this by standing up and introducing ourselves?

(20)

Stands up. Good evening. The three of us are guests in this castle. We have just arrived from the dining room where we had an excellent dinner and drank two bottles of champagne. My name is Sándor Turai, I'm a playwright, I've been writing plays for thirty years, that's my profession. Full stop. Your turn.

GÁL

Stands up. My name is Gál, I'm also a playwright. I write plays as well, all of them in **(25)** the company of this gentleman here. We are a famous playwright duo. All playbills of good comedies and operettas read: written by Gál and Turai. Naturally, this is my profession as well.

GÁL and TURAI

Together. And this young man ...

ÁDÁM

Stands up. This young man is, if you allow me, Albert Ádám, twenty-five years old, **(30)** composer. I wrote the music for these kind gentlemen for their latest operetta. This is my first work for the stage.

These two elderly angels have discovered me and now, with their help, I'd like to become famous.

They got me invited to this castle. They got my dress - coat and tuxedo made. In other words, I am poor and unknown, for now. Other than that I'm an orphan and my **(35)** grandmother raised me. My grandmother has passed away. I am all alone in this world. I have no name, I have no money.

TURAI

But you are young.

GÁL

And gifted.

ÁDÁM

And I am in love with the soloist. **(40)**

TURAI

You shouldn't have added that. Everyone in the audience would figure that out anyway. They all sit down.

TURAI

Now wouldn't this be the easiest way to start a play?

GÁL

If we were allowed to do this, it would be easy to write plays.

TURAI

Trust me, it's not that hard. Just think of this whole thing as ... **(45)**

GÁL

All right, all right, all right, just don't start talking about the theatre again. I'm fed up with it. We'll talk tomorrow if you wish.

The Play's the Thing – Question 1

What were the characters in the play doing just before the curtain went up?

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The Play's the Thing – Question 2

'It's an eternity, sometimes as much as a quarter of an hour ...' (line 6)

According to Turai, why is a quarter of an hour 'an eternity'?

A - It is a long time to expect an audience to sit still in a crowded theatre.

B - It seems to take forever for the situation to be clarified at the beginning of a play.

C - It always seems to take a long time for a dramatist to write the beginning of a play.

D - It seems that time moves slowly when a significant event is happening in a play.

The Play's the Thing – Question 3

Overall, what is the dramatist Molnár doing in this extract?

A - He is showing the way that each character will solve his own problems.

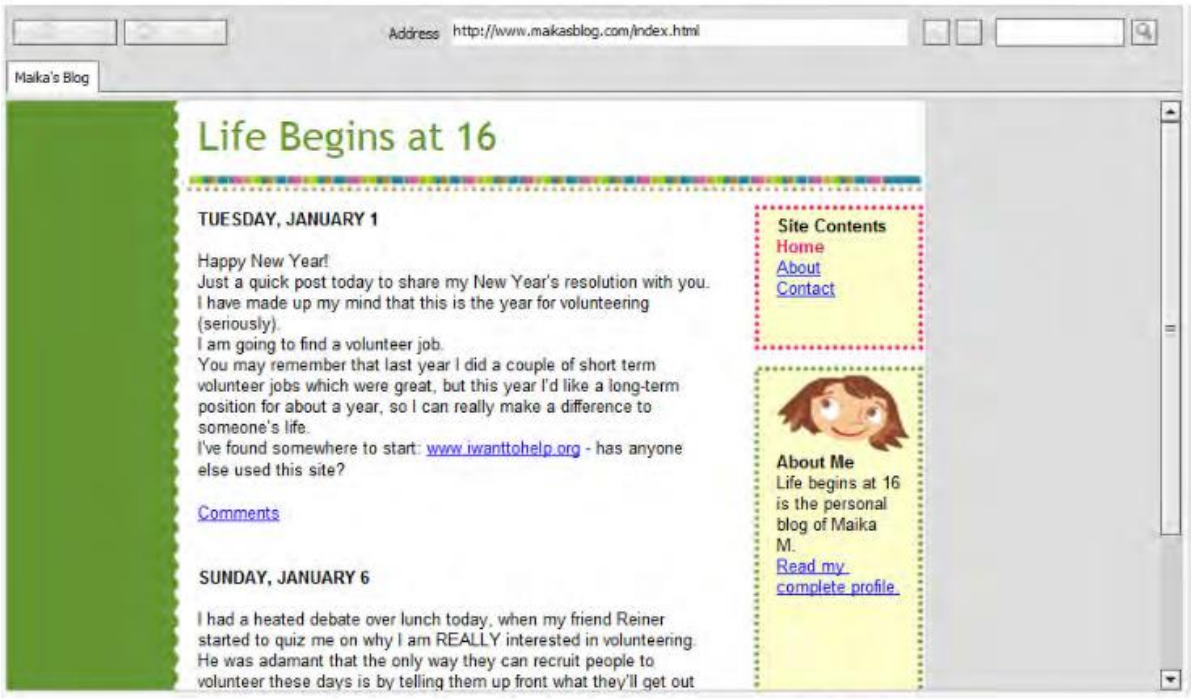
B - He is making his characters demonstrate what an eternity in a play is like.

C - He is giving an example of a typical and traditional opening scene for a play.

D - He is using the characters to act out one of his own creative problems.

Digital Reading Sample Questions, (This is a paper based test)
http://www.erc.ie/documents/pisa2009main_nationalreport.pdf

DIGITAL READING PASSAGE 1: IWANTTOHELP



IWANTTOHELP – Question 1

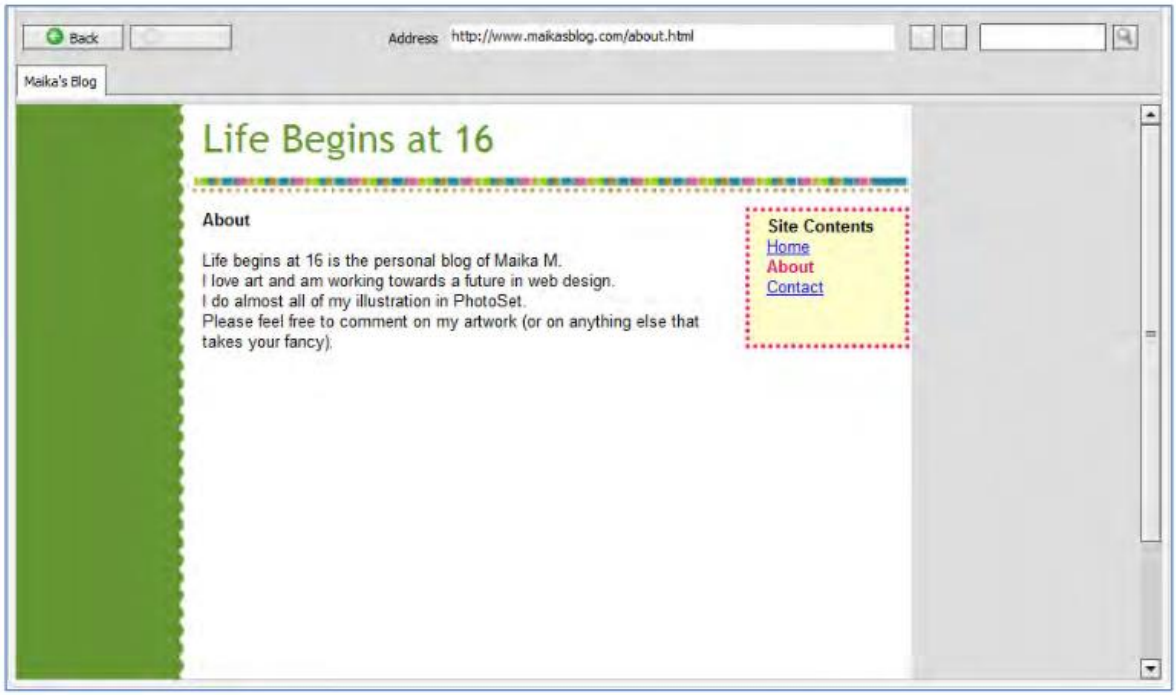
Read Maika's blog entry for January 1. What does the entry say about Maika's experience of volunteering?

A - She has been a volunteer for many years.

B - She only volunteers in order to be with her friends.

C - She has done a little volunteering but would like to do more.

D - She has tried volunteering but does not think it is worthwhile.



IWANTTOHELP: Question 2

Go to Maika's 'About' page.

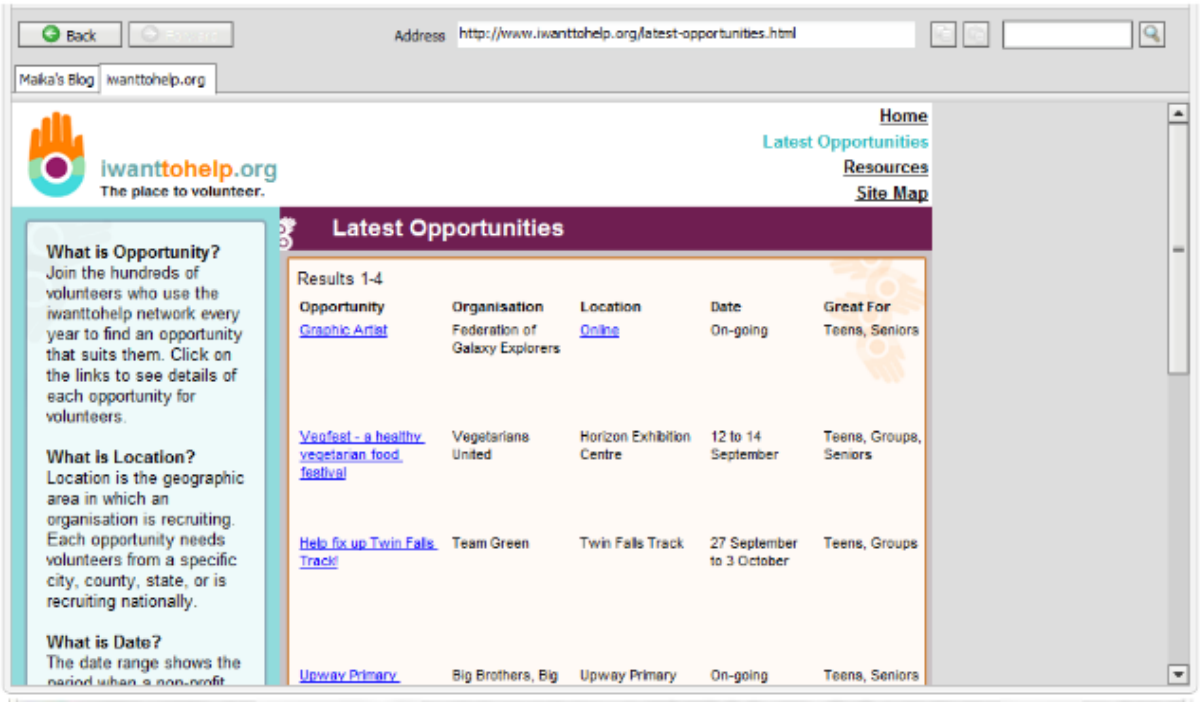
What kind of work does Maika want to do when she leaves school?

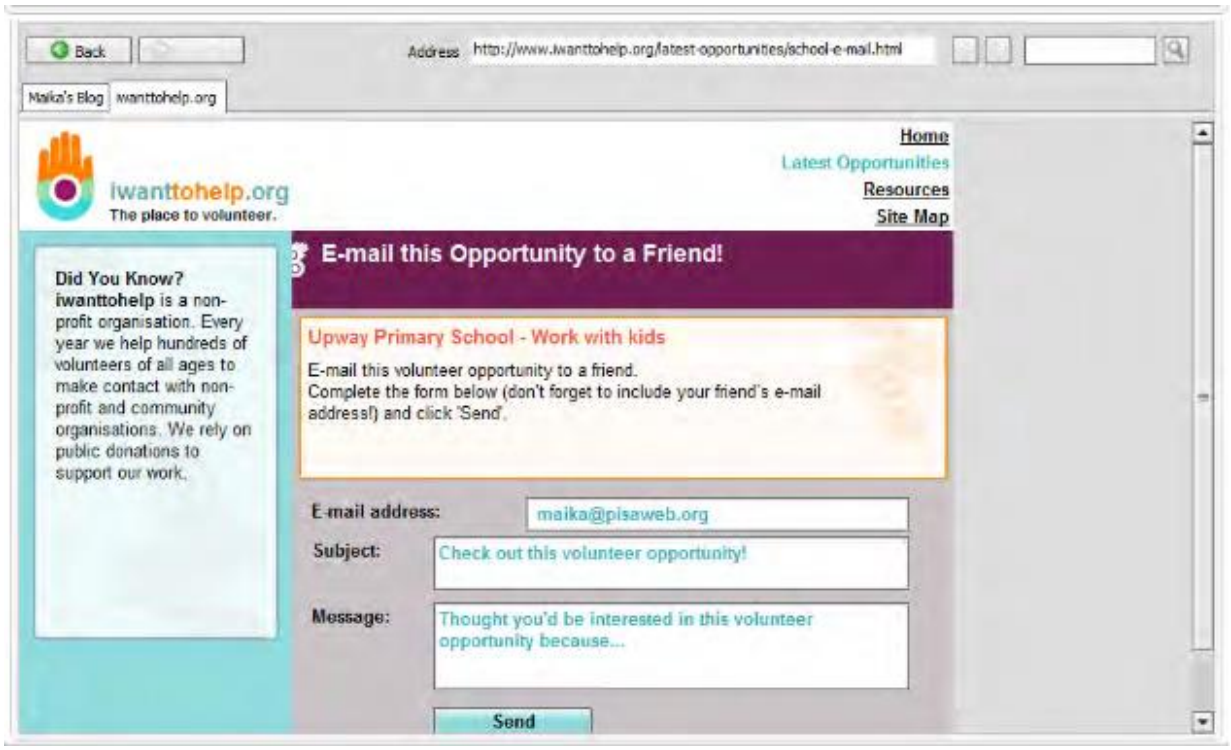
A - Photography.

B - Web design.

C - Banking.

D - Social work.


Back
Address http://www.iwanttohelp.org/latest-opportunities.html
Maika's Blog
iwanttohelp.org
iwanttohelp.org
The place to volunteer.
Home
Latest Opportunities
Resources
Site Map
What is Opportunity?
Join the hundreds of volunteers who use the iwanttohelp network every year to find an opportunity that suits them. Click on the links to see details of each opportunity for volunteers.
What is Location?
Location is the geographic area in which an organisation is recruiting. Each opportunity needs volunteers from a specific city, county, state, or is recruiting nationally.
What is Date?
The date range shows the
Latest Opportunities
Results 1-4
Opportunity
Organisation
Location
Date
Great For
Graphic Artist
Federation of Galaxy Explorers
Online
On-going
Teens, Seniors
Vegfest - a healthy vegetarian food festival
Vegetarians United
Horizon Exhibition Centre
12 to 14 September
Teens, Groups, Seniors
Help fix up Twin Falls Track!
Team Green
Twin Falls Track
27 September to 3 October
Teens, Groups
Upway Primary
Big Brothers, Big
Upway Primary
On-going
Teens, Seniors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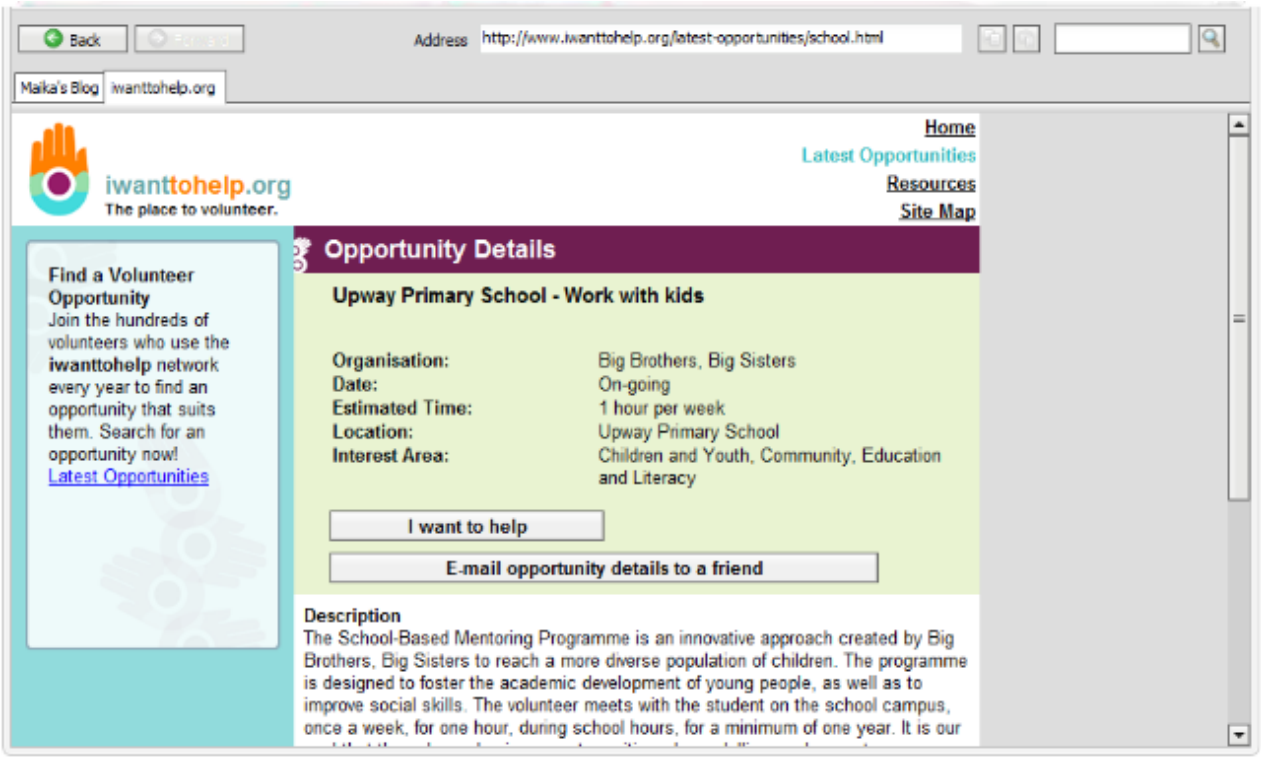
Address http://www.iwanttohelp.org/latest-opportunities/school-e-mail.html
Maika's Blog
iwanttohelp.org
iwanttohelp.org
The place to volunteer.
Home
Latest Opportunities
Resources
Site Map
Did You Know?
iwanttohelp is a non-profit organisation. Every year we help hundreds of volunteers of all ages to make contact with non-profit and community organisations. We rely on public donations to support our work.
E-mail this Opportunity to a Friend!
Upway Primary School - Work with kids
E-mail this volunteer opportunity to a friend.
Complete the form below (don't forget to include your friend's e-mail address!) and click 'Send'.
E-mail address:
maika@pisaweb.org
Subject:
Check out this volunteer opportunity!
Message:
Thought you'd be interested in this volunteer opportunity because...
Send



IWANTTOHELP – Question 3:

Read Maika's blog for January 1. Go to the iwanttohelp site and find an opportunity for Maika. Use the email button on the 'Opportunity Details' page for this opportunity to tell Maika about it. Explain in the email why the opportunity is suitable for her. Then send your email by clicking on the 'Send' button.

Thought you'd be interested in this volunteer opportunity because

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Smell – Question 1:

Go to the 'Smell: A Guide' web page. Which of these statements best expresses the main idea on this page?

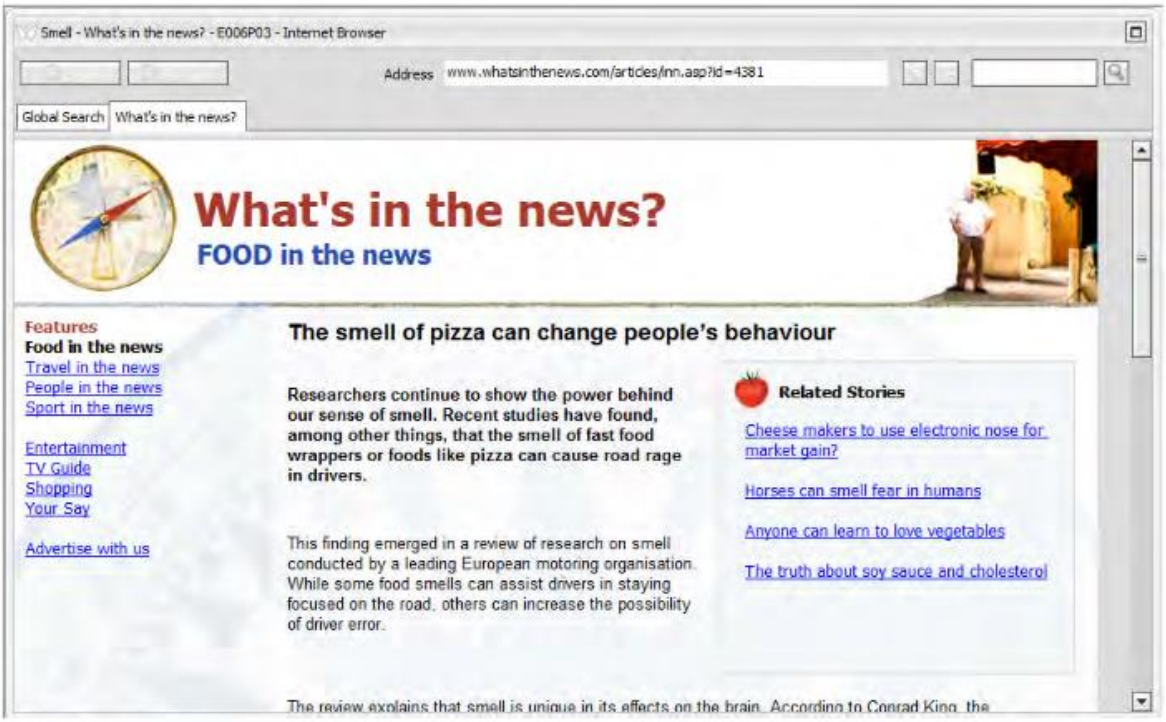
A - Smell can interfere with normal patterns of behaviour.

B - Smell warns humans and animals of danger.

C - The primary purpose of smell is to help animals to find food.

D - The development of smell takes place early in life.

E - The basic function of smell is recognition.



Smell – Question 2:

Go to the 'Food in the news' web page. Would this web page be a suitable source for you to refer to in a school science assignment about smell? Answer Yes or No and refer to the content of the 'Food in the news' web page to give a reason for your answer.

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Online Artefact – URL Reference

Please see below for the URL reference to the Online Artefact created for and used during the collaborative technology enhanced learning intervention.

https://sites.google.com/a/tcd.ie/junior-cycle-religious-education/