

Creating the Economics digital classroom
in a New Zealand secondary school:

A case study

Shraddha Sharma

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ABSTRACT

Secondary schools in New Zealand are incorporating the use of digital technologies, and reflecting this implementation in their school's statements of vision, mission and strategic intent. As this initiative is widely promoted by the Ministry of Education, there is a need to examine the issues related to the process of digital technology implementation. This study has done that. The main purpose of this study therefore was specifically to investigate the issues digital technologies in Economics create for teachers, students and leaders, and to examine the critical role of school leadership in creating the economics digital classroom. This information provides insight into the current state of pedagogical approaches applied by teachers and also how the affordances of digital technologies help improve student learning in Economics in a New Zealand secondary school. The ways in which the digitisation of educational practices exercises the leadership skills and expertise of teachers and students, supporting them to promote quality learning was also assessed. A case study approach was used to answer the research question. Qualitative methods, including semi-structured interviews and focus group was used to collect data. The qualitative data was collected from the HOD Economics (and sole teacher of Economics) and the Deputy Principal of one case study school. A focus group of Year 11 Economics students was recruited. The research revealed that leaders and teachers' digital technology adoption of digital technology in learning and teaching at the school was low and superficial. Teachers used digital technology as an add-on tool and their practices remained teacher-centred. Teachers perceived they used digital technologies in their classroom but very few actually did. The study also found that the use of digital technology in professional development was similarly superficial. Teachers attending professional development were reluctant to embrace digital technologies due to the school's current priorities of delivering examination results, and their lack of time due to time spent in preparing and marking hand written assessments. The school did not have proper channels to measure the impact of digital technologies effectively in school. The literature showed, however, that there are possibilities, but also challenges in setting up an Economics classroom. The findings confirm those reported in the literature that inefficient leadership, management, inadequate

resources and teacher motivation influence the development of economics digital classrooms.

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ATTESTATION OF AUTHORSHIP

"I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor materials which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning."

Signature:

Date:

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CHAPTER 1 INTRODUCTION

Within a short period of time, digital technologies have become a major means of learning and teaching as well as an important vehicle to shape the economic, social and political contexts of a rapidly changing society. Digital technology today is an amplifier of effects, by transforming the way people learn, interact and do business. For instance, it is clear that the use of digital technologies has produced considerable changes in commerce and industry, agriculture, medicine, engineering and education (BuaBeng-Andoh, 2012; UNESCO, 2002). Digital technology brings many opportunities for schools, teachers and students in learning and teaching. However, it is yet to be seen how effectively teachers and students use digital technologies in schools, and whether digital technology inspires teachers and students will depend on how it is used.

There are claims that digital technologies have the capacity to provide new, exciting and innovative learning and teaching strategies in all the subjects of the school curriculum of which Economics is no exception. Digital technology can facilitate collaboration and cooperation amongst students in and beyond the classroom and school settings, and such modes of learning and teaching develop learners' and teachers' competencies, such as on-going learning, critical thinking, inquiry-based learning, constructive decision making, teamwork, networking and effective communication and collaboration (Aktaruzzaman, Shamim, & Clement, 2011, Biggs & Moore, 1993; Lunnenberg & Irby, 2001). It is being said that the use of digital technologies provides today's students and teachers easier and faster access to information, teaching and learning resources and the wider community. In other words, digital technologies could enable students to learn from wherever they reside and at their own pace (Biggs & Tang, 2007). Further, digital technologies could help establish connective contexts (Siemens, 2004) by enabling students and teachers to learn from one another in and beyond the classroom and the school. Digital technologies therefore may develop students' abilities to connect and work together locally, nationally and internationally in a knowledge-based society. They will learn to use digital technologies to access, create and communicate information and ideas, solve problems and work

collaboratively. Very little is, however, known about how the above claims play out in practice. Access to digital technologies alone does not necessarily ensure effective teaching and learning, suggesting an increasing role for schools to help learners engage with digital technologies for effective teaching and learning.

Growing concern about current learning and teaching practices in most high school subjects includes the subject of Economics. According to Dredge (2010), and Millmow (2003), most teaching and learning approaches in Economics courses still operate in a passive learning environment. This environment does not promote active student engagement, critical reflection and independent learning. Yelland (2001) argues that the traditional, teacher-managed or conventional education environment is not suitable for preparing learners to participate actively in the 21st century knowledge society. It is possible that simply placing digital technology into classrooms will not automatically lead to increased economics learning because the use of digital technology supports economics pedagogy and not vice versa. Adding digital technology is helpful only if there is pedagogy in place that technology can support. No digital technology tools can provide tailored attention, encouragement and inspiration.

Several writers such as Becker (2000), Dredge (2010), and Millmow (2003) express concern over the decline in the number of students studying for and graduating with Economics degrees. The reason for the decline in the number of students studying and graduating in Economics is the growth of, and subsequent shift from Economics to Business degrees. This change permeates down to high schools where students are taking easier subjects such as Business Studies and Financial Studies for tertiary entrance. Other reasons for the decline relates to the nature of Economics, with many students perceiving it to be too boring, abstract, mathematical, or lacking interdisciplinary synergies. Schools, including school leaders and Economics teachers, are challenged to prepare students who can construct new knowledge addressing changing economic, social and political circumstances so that the study of Economics becomes more relevant, sustainable and effective. It is imperative therefore, that teachers learn the best practice for use of digital technologies in the economics classroom, to address the issue of motivating students, many of who perceive digital technology to be

more relevant than paper-based learning. Digital technology cannot, however, deliver on its own, and require skilful use by teachers. It is still not clear from literature whether creating the Economics digital classroom has the potential to achieve this, however. Further research is needed in this area and this study attempts to fulfil this need.

While there is considerable interest shown in using digital technologies to improve the learning and teaching process, there is also lack of evidence to support the view that education in the 21st century has improved with the introduction of digital technologies in classrooms (Conole & Koskinen, 2011; Organisation for Economic Cooperation and Development (OECD), 2015). This shows that the concept of digital technologies in curriculum implementation is still not clearly known. As Kaffash, Kargiban, Kargiban, & Ramezani (2010) explain, this is because the concept and its capacity to promote learning may not be sufficiently understood by teachers, students and other members of the stakeholder community.

Research does show that effective school leadership can boost student achievement (Ministry of Education, 2008; Waters, Marzano, & McNulty, 2004). Leadership is a critical requirement in enhancing the quality of learning (Gurr, 2004; Keane, 2012). Leithwood and Seashore-Louis (2011) suggest, however, that only a few school leaders can demonstrate the ability to provide high quality instructional feedback to their teachers about quality learning and teaching. Robinson, Hohepa and Lloyd (2009) have pointed when school leaders stress that learning is the core business of schooling, then that becomes the commitment of the school to achieving learning outcomes.

RATIONALE OF THE STUDY

There are claims that a large part of the school curriculum is still too academic and largely irrelevant to the majority of the students who do not proceed to tertiary education (Alton-Lee, 2003). To cope with this problem, many countries are now beginning to introduce student-centred learning approaches, and using digital

technologies to support this effort. It can be suggested that authentic and meaningful real-life learning experiences, can assist students to improve their academic performance. The use of digital technologies may contribute to this aim, and can do so by building cognitive connections to improve performances, which includes academic performance as well. Consistent with this trend, many secondary schools in New Zealand have introduced digital technologies in learning and teaching. One of the goals of the New Zealand curriculum is to help students develop into “confident, connected, actively involved and lifelong learners” (Ministry of Education, 2007, p. 8). It is expected that using digital technologies in learning and teaching might contribute to this goal.

Although some writers have written about the importance of digital technologies in education (Aktaruzzaman et al., 2011; Kaffash et al., 2010), it remains to be established whether digital technologies produce improvement in the quality of learning. As digital technologies in the learning and teaching process becomes more widely established, there is a need to examine systematically its relevance, quality and effectiveness. This constitutes the first rationale of the study.

This small-scale, qualitative research study investigated what has occurred at the classroom and school level of one case study school, and considered the role of digital technologies in helping to improve student learning in Economics. This information will assist in discovering the extent to which the present school structures and processes of the case study school support digital pedagogy especially in teaching and learning Economics. It is likely that information on what actually goes on in classrooms might reveal the leadership qualities of teachers and students that are essential in discussions on digital technology leadership. The subject of Economics was chosen as a focus within the case study, but the implications of the research may apply to other subjects of the secondary school curriculum. This is the second rationale of the study.

A third rationale of the study stems from the realisation that much of the international literature on digital technologies originates from the United States of America, United Kingdom and Australia and not much from New Zealand.

Therefore, this study contributes to the available literature on digital technology implementation in secondary Economics in New Zealand.

Fourthly, I was encouraged to conduct this study because of my personal interest in digital technology-based learning and teaching. It is directly relevant to my work as an Economics teacher in New Zealand.

AIM AND OBJECTIVES OF THE STUDY

The overall aim of the study is to critically examine the issues for teachers, students and leaders in creating the Economics digital classroom in New Zealand secondary schools. This research is a small-scale study of one school, which I contextualise in a bigger picture of digital reform and implementation of digital pedagogy.

Consistent with the overall aim, the objectives of the study are to

- investigate why an economics digital classroom is necessary
- analyse what issues digital technologies in Economics create for teachers, students and leaders
- examine the critical role of school leadership in creating the economics digital classroom.

RESEARCH QUESTIONS

In addition to the rationale and the aims and objectives, the study addresses the following research questions:

- What are the reasons schools might adopt digital technology?
- What role is played by school leadership when implementing digital technology?
- What are the challenges associated with implementing digital technology in a secondary Economics class?

This research study attempts to answer these research questions with specific reference to a single case study school.

THE RESEARCH ENVIRONMENT

The theoretical framework of the study was informed by three bodies of literature: learning theory, change theory and leadership. Consistent with the rationale behind creating an Economics digital classroom, these bodies of literature concentrate on quality and relevant learning shifting the focus of instruction from teaching to learning. What really happens in the classroom as regards to learning and teaching of Economics can be captured effectively by adapting Biggs' (2003) 3P model. This model consists of three steps. The first, termed as "presage", includes aspects of students and teaching contexts. The learning and teaching "process" is the second phase. The third phase, labelled as "product", provides information about student achievement. This study utilises these three phases for analysing the issues in creating the economics digital classroom in New Zealand secondary schools. I attempted to understand this study from the perspective of principals, heads of relevant departments, teachers and students. The contexts in which they teach and learn was seen as yielding useful information. Qualitative research methodology is adequately suited to this study (Fullan, 2001; Yelland, 2001). The important data gathering strategy is in-depth semi-structured interviewing. This strategy permits the acquisition of first-hand knowledge about the issues in creating the economics digital classroom in secondary schools in New Zealand.

One New Zealand secondary school that is implementing digital technologies in its learning and teaching processes was invited to participate in the study. The selection of the school was decided based on its accessibility. Interviews were conducted with two leaders/teachers (Deputy Principal in charge of ICT and HOD Economics), and six Year 11 Economics students were engaged in a focus group.

SIGNIFICANCE OF THE STUDY

The findings of this research study will contribute to better understanding of the role digital technologies play in supporting quality, independent, constructive, and meaningful learning in the subject of Economics. In the present context of the advancement in educational technologies, the study provides students, teachers, and other members of the stakeholder community the opportunity to construct their own realities with particular reference to the subject under study. What students learn and the way they learn is constantly changing. Students and teachers today have more access to advanced technology and their lives are increasingly dominated by technologies, adding to the significance of this study. However, the concern is that students spend more time using digital technologies and less time actually learning it (Organisation for Economic Cooperation and Development (OECD), 2015). Digital technologies are therefore being used for technology sake and less for academic development. This research studied examined the issues, relevance, quality and the effectiveness of digital technology based learning and teaching. The study provides practitioners and policy makers with relevant information and insights that will contribute to understanding the issues in creating the Economics digital classrooms in secondary schools in New Zealand. The study contributes to the international literature on the management and implementation of digital technologies in the learning and teaching process and the debate on the nature and values of digital technologies in education and other aspects of social, economic and political life.

SUMMARY OF THE THESIS

The thesis consists of five chapters. The following outline gives the reader a summary of each chapter. Chapter one (the present chapter) has introduced the thesis and focused on the background information on the use of digital technology in learning and teaching, especially in relation to Economics. The chapter has explained the rationale of the study, outlined the aims and objectives of the research and provided the research questions before explaining the significance of the research.

Chapter 2 provides a review of the literature. This chapter argues that digital technologies in the Economics classrooms can provide relevant curriculum and instruction for the 21st century participation, support and student engagement in learning academic content and skills. This chapter looks at the impact of digital technologies in learning and teaching, learning theories and provides a background to Economics education. Finally, the chapter examines change management and role of school leadership in developing digital pedagogy.

Chapter 3 explains the research methodology and the research design and justifies why the research design was considered. This chapter discusses the rationale behind the methodological orientation. It also focuses on the research process, explains the ethical issues, outlines the limitations of the research design and discusses how the data was analysed.

Chapter 4 presents the thesis findings from the participants' viewpoint. It is presented as four themes that emerged through the process of analysing data. These themes were learning, pedagogy, issues and policy.

Chapter 5 discusses the implications of the research findings presented in chapter four with reference to the research questions and literature review. The chapter provides suggestions for further research before concluding the chapter with final thoughts about the present study.

Chapter 6 provides a conclusion of the research study, it concludes the research questions that were studied through a research methodology of interviews and focus group discussions. It begins with a review of the study, followed by the conclusions from the research study and issues in setting up Economics digital classrooms, using one New Zealand secondary school as a case. The strengths, limitations and recommendations of the research are stated.

CHAPTER 2 LITERATURE REVIEW

INTRODUCTION

This chapter provides the theoretical and conceptual framework of the study that supports the research aims, which are to critically examine the issues for teachers, students and leaders in creating the Economics digital classroom in a New Zealand secondary school.

This section addresses the research question: What challenges and opportunities do digital technologies present to New Zealand schools? The theoretical and conceptual framework of this study is informed by three bodies of international literature: digital technologies and learning theory; digital technologies and change; and digital technologies and leadership. As mentioned in the introduction, the use of digital technologies, if used effectively in learning and teaching, can promote quality, relevant and sustainable learning. It can provide learners with competencies such as active and independent learning, critical thinking, cooperative and on-going learning (UNESCO, 2002). Currently digital technologies are an innovation in learning and teaching (Lunnenburg & Irby, 2006). The use of digital technologies still lags behind expectations for its use, however. Past research and use of digital technologies has had very little impact on teaching and learning. The use of digital technologies and its claimed benefits may be wishful thinking because of the gaps between what the promises of digital technologies in teaching and learning and the reality in classrooms (Loveless & Williamson, 2013).

Relevant change literature dealing with the initiation, implementation and institutionalisation phases of new technology is important to this study. The factors and themes associated with the implementation process are particularly relevant to this study (Lunnenburg & Irby, 2006). Finally, a review of relevant literature on leadership is necessary to understand the implementation process of digital technologies in learning and teaching.

The purpose of this study is for educators, school administrators, teacher educators and curriculum developers to understand more about the potential and limitations of integrating digital technology into the classroom. To study this in detail the subject of Economics is taken as a case study but the implications could apply to other subjects as well. The overall aim of the study is to investigate why the economics digital classroom is necessary, analyse what issues digital technologies in Economics create for teachers, students and leaders, and to examine the critical role of school leadership in creating the economics digital classroom. To develop a theoretical framework to inform the study, this chapter explores the literature relating to digital technologies and learning theories, digital technologies and Economics pedagogy, digital technologies and leadership, and digital technologies and change theory.

This literature review addresses the relevant educational research to argue that including digital technologies in the economics classrooms can provide relevant curriculum and instruction for the 21st century participation, support and student engagement in learning academic content and skills if used appropriately. Digital technologies have a powerful impact on daily life and hence culture. Likewise, globalisation and technological change are two key features that are changing and shaping our lives. It cannot be assumed that students and teachers will learn with digital technology just because it is available. To participate in a future knowledge society, students will need to be able to adapt to change, research, experiment, think critically; work creatively, plan, self-assess and use feedback as well as project management tools to enable them to communicate ideas in a creative and critical way (Bingimlas, 2009).

Digital technologies have become a major means of learning and teaching as well as an important vehicle shaping the economic, social and political contexts of a rapidly changing society (BuaBeng-Andoh, 2012; UNESCO, 2002). They offer new ways for students to represent their thinking, helping them clarify ideas, make connections, identify patterns, and reflect on their thinking across the curriculum. Students can save, build on previous work, use scaffolds and templates designed for particular learning outcomes, and work collaboratively or individually (Pritchard, 2007). Although many writers have written about the

importance of digital technologies in education (Aktaruzzaman, Shamin, & Clement, 2011; Naidu, 2003; Pritchard, 2007), it is not yet established if the use of digital technologies produces improvement in the quality of learning.

According to the first OECD PISA assessment of digital skills, schools have yet to take advantage of the potential of technology in the classroom to give students the skills they need in today's technologically connected world. In *Students, Computers and Learning: Making The Connection* (Organisation for Economic Cooperation and Development (OECD), 2015) it is noted that even countries which have invested heavily in information and communication technologies (ICT) for education, have seen no noticeable improvement in their performance in PISA results for reading, mathematics or science (Organisation for Economic Cooperation and Development (OECD), 2015). There is therefore a need to examine systematically the relevance, quality and sustainability of the use of digital technologies in the learning and teaching process.

DIGITAL TECHNOLOGIES

It is no longer a question of whether or not we will implement digital technologies in our schools, but whether we will do it well. (Campbell, 2001)

Over the last two decades, there have been significant increases in the implementation of digital technologies in New Zealand secondary schools. The term 'digital technologies' is used to describe the use of digital resources to effectively find, analyse, create, communicate, and use information in a digital context (Campbell, 2001). Digital technologies include the range of hardware and software devices and programs such as personal computers, assistive technology, scanners, digital cameras, multimedia programs and image editing software, database and spreadsheet programs. It also includes the communications equipment through which people seek and access information including the Internet, email and video conferencing. The use of digital technologies in appropriate contexts in education can add value to teaching and learning, by enhancing the effectiveness of learning, or by adding a dimension to learning that was not previously available. Digital technologies may also be a

significant motivational factor in students' learning, and can support students' engagement with collaborative learning (Kozma, 2001, p. 2).

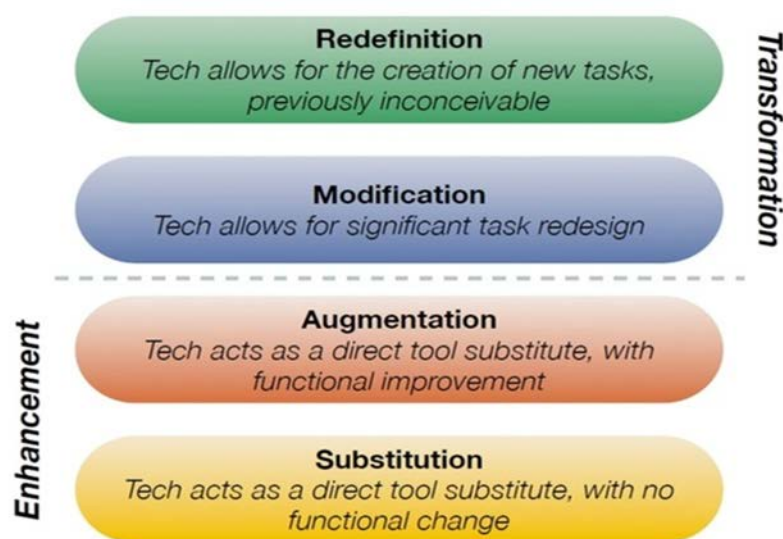
Impact of digital technology on learning and teaching

Digital technologies have become an equally indispensable tool in the classroom for the teacher and learner. It is now becoming difficult to imagine learning in the 21st century without digital technologies. Digital technologies establish connective contexts by making links between theory and real life experiences (Siemens, 2004). With the use of digital technologies learning can be truly participatory in real-world contexts bridging the abstract to the real life, helping different types of learners gain better understanding of the subject matter. The use of digital technology can encourage personalised learning and also learning can take place any time and from anywhere. However, the reality of this type of learning is yet to be seen (Loveless & Williamson, 2013). The active use of digital technology develops learner and teacher competencies such as on-going learning, critical thinking, inquiry-based learning, constructive decision-making, teamwork, networking, effective communication and collaboration (Aktaruzzaman, et.al, 2011). A growing body of evidence supports the view that digital technologies have the potential to improve student outcomes and to enrich, if not transform, the learning experience of children (Underwood, 2009). However, little is known about how these claims play out in practice.

According to Kennewell (2001), the affordances of technology can be broadly defined as the ways in which technology offers or supports certain things, specific to teaching and learning. These affordances include information accessibility, task automation, knowledge representation and communication - collaboration with peers and teachers. Affordances can be a useful framework for considering how digital technologies might be used to support learning and teaching (Bower 2008; Conole & Dyke 2004). Teachers need to answer the following questions in relation to the affordances of digital technologies: do they actually add to or extend learning possibilities? Do they allow us to do things we could not do before? Do they do the things we currently do – but more effectively?

Digital technology affordances do not, however, arise from digital technologies, but from the selection of digital technology tools to engage and support learners. Schools and teachers should find ways to use digital technology when it is appropriate and effective to do so. The question about teaching with digital technology is about serving learners and not about using digital technologies (Bates & Pool, 2003). It is integrating digital technology into instruction that can improve access to information.

To help with the above questions, there are various models available, one of which is the SAMR model. SAMR is a model designed to help educators infuse technology into teaching and learning. Popularised by Dr. Ruben Puentedura, the model supports and enables teachers to design, develop, and infuse digital learning experiences that utilise technology. The goal is to transform learning experiences so they result in higher levels of achievement for students.



(Puentedura, 2013)

At the substitution stage, technology is used as an alternative tool for completing the original task with no real change in task function. In the augmentation stage, technology is still used as a direct substitute; however, it offers improvements in terms of the function of the task. At the modification stage, technology starts to enhance teaching and learning. It requires tasks to be redesigned in order to make the most of the technology available. For example, peers could add feedback comments to the document in real time, which could be responded to,

and would improve the end product further. Finally, in the redefinition stage, technology enhances the learning experiences for students and has the greatest impact. With technology, educators are able to design tasks that were previously impossible. A possibility is to extend the earlier task example, however, this time the end product will be uploaded to a website or perhaps a class blog. This opens up the possibility of feedback from his global audience, which they can respond to (Puentedura, 2006).

Students today make use of digital technologies every day. They live in the digital world. However, there is a gap in the use of digital technology and the effective use of digital technology for learning. There is insufficient use of digital technology to support learning (Beetham & Sharpe, 2013; Underwood, 2009). Matching learning experiences in class with the use of digital technology is critical. Technologies that move teachers outside their comfort zone tend to have a slower uptake and higher rejection rates (Watson, 2001). Some teachers adapt very well to new gadgets and technologies due to their own interest. Here school leadership is a key factor (Blasé & Blasé, 2000). The integration of digital technologies into pedagogy should support the learning goals. It is important to note that digital technology use is not a goal in itself, but a tool to broaden and deepen learning opportunities. Digital technologies have the potential to support and shape a pedagogy that is more active, participatory, personalised, flexible and inclusive (Fullan, 2013). It is believed that at the micro or grass root level, technology use can have an impact on student learning if there is a better understanding of the pedagogic potential and a wider dissemination of exemplary and creative use of these technologies to show how they can be embedded in teaching to improve quality (Lee, 2006). Schools can take many actions to address these issues: be well equipped with appropriate devices and equipment, including Internet access; invest in training teachers; and create a technology friendly environment in classrooms, libraries, and student areas like canteens (Higher Education Funding Council for England, 2008).

Learning theories and future pedagogy

This section looks at the three areas of thinking about the use of digital technology and explores the relationship between behaviourist, constructivist and connectivist learning theories. This spectrum of learning theories consists of many approaches or ways of explaining how humans learn. With knowledge of different learning theories, teachers are better able to make choices about how to approach their teaching in ways that will best fit the needs of their students. Furthermore, the choice of approach will have major implications for the way that digital technologies are used to complement teaching (Beetham & Sharpe, 2013; Harasim, 2012). It must be noted, however, that digital technology is only a medium that delivers instructions to learners.

The theory of behaviourism holds that learning is nothing more than the acquisition of new behaviour (Ravenscroft, 2001). This paradigm draws on Skinner's work on operant conditioning and behaviourism (Weller, 2002). Behavioural theory considers the ways in which students and teachers respond to new media, and to new policies and visions that are produced to drive the digital agenda in schools. In the behaviourist paradigm, learning is thought to be best facilitated through the reinforcement of an association between a particular stimulus and a response (Weller, 2002). Thus, it focuses on activities that promote learning as a change in learners' observable actions. Applying this to educational technology, computer-aided learning is the presentation of a problem (stimulus) followed by the contribution on the part of the learner to the solution (response). Feedback from the system provides the reinforcement (Ertmer & Newby, 2013). The use of digital technologies to present learning materials, obtain responses from learners and provide appropriate feedback fits within the behaviourist-learning paradigm.

Constructivism is a philosophy of learning based on the idea that the individual, through his or her interactions with the environment, constructs knowledge (Loveless & Williamson, 2003). The theory of constructivism thus focuses on activities in which learners actively construct new ideas or concepts based on both their previous and current knowledge (Berger, 2000). Learning is therefore an active process. Digital technology devices provide a realistic context, while at

the same time offering access to supporting tools. Within a constructivist-learning framework, teachers encourage students to discover principles for themselves.

Siemens (2004) emphasises that digital technologies have made it possible for educators to begin thinking about learning differently. He argues that learning theories should now move into the digital age for this to happen. According to Siemens (2004) while theories of behaviourism and constructivism highlight what will help to create an effective learning environment, connectivist learning theory can potentially improve education significantly. He argues this can occur through the revision of educational perspective to shift toward learner-centred education. Connectivism proposes that students learn as they connect pieces of information from different sources. Students are exposed to text messaging, instant messaging and broadband web browsing, using technologies such as YouTube, blogging, and wikis. The theory allows teachers to step back from controlling course content, to bypass textbooks and traditional lecture presentations, and to bring learners to the forefront in locating, presenting and making sense of relevant knowledge.

The existing learning theories of behaviourism and constructivism do not provide for the changing nature of learning and learners, achieved through technological advances. Connectivism, on the other hand, integrates principles of chaos, network, complexity and self-organisation theories (Downes, 2006; Siemens, 2004).

Marc Prensky (2001) argues that today's learners are no longer interested in, or even capable of, learning in environments that do not reflect their real-world experiences. Most students today possess wired devices including cell phones and laptops. They are constantly in touch, and responding to their changing world in ways that chalk and talk or white board approaches cannot achieve. Teachers, it can be suggested, find it difficult to implement constructivist learning, however, or to create collaborative learning environments.

Within connectivist theory, learning is considered a process in which the role of informal information exchange, organised into networks and supported with

electronic tools, becomes more and more significant. Learning becomes a continuous, lifelong system of networked activities, embedded in other activities (Downes, 2006).

Connectivist learning theory emphasises the importance of instructing students to search for, filter, analyse and synthesise information in order to obtain knowledge. Siemens states that when knowledge is required but not known, the ability to plug into sources to meet the requirements becomes a vital skill. As knowledge continues to grow and evolve, access to what is needed is more important than what the learner currently possesses (2004). While the theory presented by Siemens and Downes is important and valid, it is a tool to be used in the learning process for instruction or curriculum rather than a standalone learning theory. Continually evaluating how each new generation learns about instruction and curriculum, serves to hold education to high standards. The proposed learning theory has generated a debate over whether it is a learning theory or instructional theory or merely a pedagogical view. When compared to established learning theories, there is an overlap of ideas (Ertmer & Newby, 2013). Verhagen (2006) states that connectivism is a pedagogical view rather than a learning theory. He asserted that learning theories should address the issue of how to enable the learner at the instructional level. By contrast, connectivism is directed to the examination of what is learned and why, at the curriculum level. Kerr considers connectivism to be part of existing learning theories, where various technologies affect methods of instruction in numerous ways (Downes, 2006). Behaviourist strategies teach facts and what is needed for understanding concepts. Constructivist strategies use a shift toward real-life application, where the learner is given the opportunity to construct personal meanings from what is presented. Connectivism can be used as an important instructional guide or theory to develop previous learning theories for their application to a globalised and networked world, but not as a standalone learning theory (Ally, 2002).

Much discussion about digital technology is focussed on the question of how digital technology facilitates teaching and learning. Downes (2006) states that the most important element affecting how and whether teachers use digital

technology in their teaching is their pedagogical belief on learning and teaching. Downes (2006) further suggests a transition from behaviourist to a constructivist paradigm to connectivist paradigm in both teachers' beliefs and educational systems in order to benefit from technology as much as possible. Learning to be a participant in a digital age requires an engagement with people, tools and contexts to increase knowledge for action.

According to Downes, teachers' beliefs about knowledge acquisition and the effective use of technology are correlated with the ways they use technology in their classrooms. The teacher's attitude to learning is seen as another factor in the successful implementation of digital technology. There is no doubt that technology engages and motivates young people. This benefit is, however, only an advantage for learning if the activity is effectively aligned with what is to be learned. It is therefore the pedagogy of the application of technology in the classroom that is important (Bonk & Reynolds, 1997). Kozma (2001) argues that the particular attributes of the computer are needed to bring real-life models and simulations to the learner; thus, the medium does influence learning. It is not the computer per se, however, that makes students learn, but the design of the real-life models and simulations combined with the students' interaction with those models and simulations that provide a learning experience (Schunk, 2011). The computer is merely the vehicle that provides the processing capability and delivers the instruction to learners (Weller, 2002). Another way of learning with digital technology is by the design and playing economics games, which presents a tool kit of knowledge, skills, values and interest in a task. Teachers, however, find engagement with digital technology is challenged by the focus in schools on the syllabus completion and passing examinations (Loveless & Williamson, 2003).

No learning theory is flawless in its explanation of how students learn and how teachers should teach. Following this reflection there are two significant differences between the theories in defining the role of the classroom teacher. Behaviourist approaches favour a teacher-centric approach, while constructivism and connectivism favour learner-centeredness. In a teacher-centred classroom, the teacher assumes the responsibility for instruction. In a learner centred

classroom, the learner accepts the responsibility for learning (Downes, 2006). However, the classrooms often are a mixture of teacher-centred and learner centred environment. The structure of the program and affordance of pedagogy may have a considerable influence. If used appropriately can help redesign educational environment that better meets the needs of learners in the 21st century.

Economics Education

The current literature on digital technology in education lacks sufficient empirical evidence of the potential benefits and issues related to the implementation of digital technologies in secondary Economics classrooms. This study seeks to address that gap.

The subject of Economics provides a range of frameworks, which can be used for modelling and understanding the problem-solving and optimising behaviour of decision-makers. Economics provides the skills needed for analysing and implementing solutions to many of the critical problems facing businesses and society today (Ministry of Education, 2007). Economics is also directly related to daily life. Economics is by no means a singularly focussed discipline. Economic theory incorporates various other disciplines (Millmow, 2003), while being a distinct discipline because every person, as well as every society, faces economic problems arising from the fact that individually and collectively we have limited resources including our own time and capabilities to meet unlimited wants. As a tool, Economics provides a disciplined way of thinking about alternative mechanisms for addressing this problem in a way that contributes to the improvement of overall wellbeing (Agnew, 2015). Technological advances have now led to significant improvements in the economist's toolkit over the years. The availability of data, the power of modern computing, the greater access to ideas and information, the speed of that access, have all helped to increase our understanding of Economics.

Economics educators can offer twenty-first century students' relevant curriculum and instruction by thoughtfully integrating the potential benefits of the digital curriculum into the economics classroom to teach students to think critically in a

landscape of overwhelming information. Although the potential for Economics learning to be transformed by the availability of digital technologies is acknowledged, research has found that technology still plays a marginal role in Economics classrooms. The focus now is learning technology but there is still a need to focus more on learning with digital technology (Agnew, 2015; Millmow, 2003). Despite enormous advancement in educational technologies, learning facilities and space, research and publications, there is a growing concern about current learning and teaching practices in most subjects of the school curriculum of which the subject of Economics is no exception (Agnew, 2015). Several writers such as Becker (2000), Dredge (2010), and Millmow (2003) have expressed concern about the decline in the number of students studying for and graduating with Economics degrees. Among the reasons put forward for the decline of Economics has been the growth of and shift to Business degrees (Agnew, 2015). Other reasons for the decline relate to the nature of Economics with many perceiving it to be too boring, abstract, mathematical, or lacking interdisciplinary synergies (2015).

New Zealand secondary school teachers have for the past twenty years have gone through continual educational reforms (Nuthall, 2009). As in all secondary subject areas, Economics has been subjected to assessment reform firstly with the introduction of the New Zealand Certificate of Educational Achievement (NCEA) in 2004, and then with continual changes in the content and administration of these assessments. Economics teaching has become increasingly assessment-driven. This can be seen as resulting from accountability pressures placed upon teachers and schools, with increased reliance on achievement and performance targets as measured by students' assessment results and teachers' appraisal objectives.

Change Management

With the continuing emergence of new digital technologies, schools need to be flexible enough to embrace their potential (Robertson, 2007). If not managed effectively, this kind of innovation and change can be unsettling for staff, disruptive to working practices and therefore counter-productive for all concerned

(Fullan & Langworthy, 2013). In today's digital era, students need challenges that engage their interests and aspirations. Bringing digital technology into schools, even giving every student a device, does not change the learning experience by itself. To transform students' learning experiences and engage them in deep learning, the fundamental design of learning activities must change. This shift in teaching practices is the key to ongoing educational transformation (Wong & Li, 2006).

The school is not a static organisation but grows as its educative and learning process unfolds. In this process, both planned and unplanned educational changes come from many directions (Barber, Rizvi & Donnelly 2012). There have been unprecedented changes in school management, curriculum and pedagogy and parental participation in schooling due to the digitisation of pedagogy (Pedro, 2009). This requires a leadership style that promotes sharing, participation, care and learning (Groff & Mouza, 2008). It is also important for leaders and the change users to understand the nature and process of change and the approaches that are likely to facilitate the change process effectively (Pedro, 2009).

Fullan (2010) rightly emphasises that not many teachers and their leaders understand what change really means and what factors and processes account for it. This is evident in teachers expressing their frustration at lack of support, time and awareness given to implementing changes, and quality of professional development provided. It can be suggested that leaders bring in new change simply to show that Ministry of Education requirements have been met, rather than implementing change for a genuine reason or considering the possible impact it will have on the students. Many useful changes, whether imposed or not, often result in a certain degree of uncertainty, anxiety, frustration and struggle (Fullan, 2013).

Despite a growing acknowledgment of the need for digital transformation, most stakeholders in education struggle to get clear benefits from new digital technologies (Pedro, 2009). They lack both the management temperament and relevant experience to know how to effectively drive transformation through technology (Killen, 2005). Useful educational changes are sometimes possibly

only partially accepted or even abandoned as leaders might not know the outcomes of the change, or be under pressure from parents who reject the change. The transfer of leaders between schools or the lack of sharing ideas with other colleagues can also make changes, such as digital technology implementation, unsuccessful.

A critical issue is not, however, digital technologies themselves, but teachers' effective use of digital technologies in their teaching. Perhaps the assessment driven nature of secondary academic subjects like Economics could account for the challenges some teachers experience in using digital technologies in Economics classrooms. On the other hand, an education that does not include developing students' digital literacy is one that will leave them ill-prepared for the future. Digital information is essential to almost every aspect of modern life, which means that there is a need as never before, for learners and teachers who are information literate in a digital context (Keane, 2011).

School improvement currently seeks to improve the status quo rather than really finding out how complex, ambiguous, and challenging the issue is. There is a gap between the conventional pattern of schooling and what might currently be considered as a suitable model to inform planning and policy formulation (West-Burnham, 2006). The purpose of educational change is to help schools accomplish their goals more effectively by replacing some structures, programmes and/or practices with better ones. This may enhance organisational effectiveness and school improvement. School leadership is the key to school improvement. School improvement may not quickly respond to changes but with proper leadership and guidance educational change will be made apparent (Underwood & Dillon, 2011).

Elmore (2004) describe change as a "process", indicating that it should not be perceived as an incident that occurs in a defined period of time within which the required change should be accomplished. Fullan (2001) like Elmore (2004), suggests that any educational change is a process and not an event. Fullan suggests three interacting phases of the change process: initiation; implementation; and institutionalisation. The initiation phase covers the period from the first intimation of a change to the decision to proceed with

implementation. In the initiation phase, according to Fullan (1991), the combination of three R's of relevance, readiness and resources are critical to any educational change as initial considerations. Here relevance encompasses the interaction of need and clarity of innovation. Readiness includes the practical and conceptual capacity of practitioners and the setting in which change will take place to initiate and develop a preferred innovation. The provision of support is an important part of the change process, requiring the accumulation of resources.

In the implementation phase, the innovation is prepared and put into practice. Many factors affect the change process and must be taken into consideration. There is the human factor in any change process, which plays the most crucial role. In other words, individual understanding, commitment and contribution to educational change make the implementation process proceed successfully or fail. Tearle (2004) states that leaders who have the responsibility for the implementation phase of an educational change can appeal to the teachers and others into the change setting by offering plenty of resources, including material resources, as well as time and energy. His proposal is to balance the pressure and support during the implementation of the innovation so that teachers who have made a contribution to the implementation process are rewarded and others who have not acted in accordance with implementation are encouraged by providing more support.

The institutionalisation phase eventuates when the innovation becomes an integral part of the practice or policy. The successful implementation of the change process depends largely on policy and political environments including teachers and the members of the school community (Fullan, 2013). Moreover, it relies on key themes such as vision building and initiative-taking, evolutionary planning, staff development, decision-making, problem-solving, teamwork, monitoring, supervision and restructuring that focus on staff development. The change literature identifies the characteristics of the innovation as the key influence on the implementation phase. The characteristics of the innovation are concerned with needs, clarity, complexity, quality and practicality of the innovation (Fullan, 2013; Lunnenberg & Irby, 2006). Ely (1999) identifies five conditions that facilitate the implementation of innovations:

- dissatisfaction with the status quo
- existence of knowledge and skills
- availability of resources
- availability of time, rewards or incentives exist
- participation, commitment, and leadership

If all five are present in the innovation introduced, there is high probability of sustained implementation leading to institutionalisation. The implementation of an innovation will not work if one or more of the conditions are absent and consequently, there is a less likelihood of continuation.

An adopter of an innovation needs to learn about the innovation, be persuaded to try it out before making a decision to adopt or to resist it. Ely (1999) identifies conditions that should be present during the implementation of innovation in education. These conditions complement each other and should be present for the innovation to be successfully implemented. Absence or lack of these conditions would see to the discontinuation and diffusion of innovation as opposed to including technologies in teaching and learning, which requires a reconceptualisation of the curriculum and how it can be taught.

The role of school leadership in developing digital pedagogy

Effective leaders have strategies for digital technology implementation in their school and ensure their teachers commit to the implementation of their strategy by initiating sound projects and offering adequate training to the teachers (Fullan, 2013). Technology is intensifying existing tensions and paradoxes and stretching leadership capacity (Williams, 2008).

School leaders help create the very conditions for innovative teaching and learning to flourish. Leadership of a school is a collaborative team effort, and teachers are also perceived as leaders in the classroom. However, there appears to be a vacuum of critical reflective educational leadership in Economics (Agnew, 2015; Becker, 2000). The principal needs to be the leader through action but can

also facilitate others to lead in this area (Cardno & Collett, 2004). Principals can establish and foster a shared digital learning vision, develop a digital learning plan linked to a shared digital learning vision and school priorities, and may distribute and share responsibility for leading digital learning (Gurr, 2004; Keane, 2012).

Effective educational leadership builds the pedagogical, administrative and cultural conditions necessary for successful learning and teaching. Principals do not do this alone. They use their leadership and management skills in ways that motivate and develop the capabilities of others so that responsibility for strengthening and sustaining the work and direction of the school is shared (Robertson, 2007). Aspects of educational leadership are specific to the principal's role. These include setting strategic goals intended to enhance teaching and learning, and obtaining and managing the resources needed to achieve those goals. The Principal's role as an educational leader includes: leading change, problem-solving, building relational trust, and managing the complex issues that occur in any school community (Fullan, 2013; Ministry of Education, 2008). Educational leadership and leading change requires principals to communicate clearly their intentions to teachers. If principals in schools focus more on building a better relationship with all teachers and if teachers feel they are being cared for and also motivated, they are likely to be leading their school towards improved student's performances.

Moreover, integrating staff considerations in the development and implementation of school practices is central to making significant change. Effective principals get the relationships right and tackle the educational challenges while at the same time incorporating both, simultaneously, into their problem-solving (Robertson, 2007). Focussed effort in a school is important if school-wide teaching and student learning are to improve. This involves communicating clear academic goals, having high expectations, and valuing student well-being. All change processes benefit from being informed by evidence and having regular reviews of progress and effect (Coburn, 2003).

School leaders have an impact on student achievement primarily through their influence on teachers' motivation and working conditions. Their influence on teachers' knowledge and skills produces much less impact on student achievement (Fullan, 2013).

By empowering teachers to own the process, school leaders set educational goals for the implementation of digital technologies in schools by involving them championing, promoting and developing digital technologies (Fullan, 2013). According to Loveless & Williamson (2013), there is a growing body of evidence that demonstrates how technology can be used effectively to support learning. For that evidence to be useful in practice, it must address the contexts within which the technology is used; and it needs to be presented in ways that are accessible to teachers and learners. Teachers may require additional training enabling them to use technologies in new ways. Other major challenges faced by school leaders in implementing digital technologies are their own personal lack of training in the use of digital technology and resistance from the school community, and possibly from teachers too. Other issues include inadequate technological facilities, unreliable wireless networks, limited human resources, equity concerns and bureaucracy.

CONCLUSION

It is clear from the literature review that the use of digital technologies is now a significant feature of education. Students use the Internet as a resource to improve their social skills and develop their knowledge. Students are daily users of technology, and often have good skills and high expectations in the use of digital technologies. Teachers need to be skilled in the use of digital technologies to meet these expectations. Teachers are encouraged to embrace digital technologies in their classrooms to cater for the needs of the new generation of learner. They are also finding ways to balance the allure of technology and its practical benefits in the learning processes.

The review examined research on learning theory; economics pedagogy, change theory and leadership. This literature stresses the establishment of collaborative

learning structures and processes so that teachers and students can work and learn together in an environment where there is ongoing professional development. My review of the literature indicates that not much is known about the ways in which teachers integrate digital technology into the subject of Economics in secondary school contexts in New Zealand, and the issues facing school leaders in setting up Economics digital classrooms. The current literature on digital technologies in education lacks sufficient empirical evidence of the potential benefits and challenges that digital technologies may offer secondary Economics education from the perspective of the classroom. This research study offers more empirical understanding of the impact of digital technologies from the perspectives of students, teachers, and leader's in the classroom learning community.

CHAPTER 3 RESEARCH METHODOLOGY

This study set out to look at classroom practices in a case study school where an attempt was made to implement digital technology in the Economics classroom. The study was undertaken from the perspective of the Deputy Principal in charge of digital technology, the Head of Economics who was the only economics teacher at the school and a group of year 11 Economics students at a New Zealand case study school, together with the context in which they teach and learn.

The literature stresses that listening, observing and forming an empathetic alliance with research respondents is an important research skill (Bogdan & Biklen, 2003). This attribute allows researchers to enter the world of their research respondents. If they fail to do so it may be difficult to understand the meanings the research respondents construct around events and context of their daily lives (Bryman, 2006).

Qualitative research methodology is suited to this study. The important data gathering strategies in this study included in-depth semi structured interviewing and a student focus group. These approaches can yield rich descriptive data. The emphasis on description necessitates attention to the mundane details of everyday life which are necessary to understand what is going on in a particular context, and to provide clues and pointers to other layers of reality (Bogdan & Biklen, 2003; Scott & Usher, 2010). Such a research design also requires the presentation of data in a descriptive and narrative form so that the research audience clearly understands the explanations derived from them. The analysis is guided by specific objectives. (Creswell, 2007).

This chapter explains the research design of this study and justifies why the design was considered well suited to investigate the research questions. This chapter is presented in two sections. The first section discusses the rationale behind the methodological orientation adopted for the research. In particular, it justifies the choice of a qualitative approach to field work, and explores the debate

on the strengths and limitations of this research tradition. The second section focuses on the research design, research process adopted for the study, and the ethical issues associated with this study. This is followed by a discussion of how the data was analysed.

METHODOLOGICAL ORIENTATION

The nature of research questions, the aims of the study and the availability of resources guided the methodology that underpins the data gathering strategies of this study. The focus of this study was to analyse the issues in creating the Economics digital classroom in one New Zealand case study secondary school. This study tries to understand the issues in creating the Economics digital classroom from the perspective of those involved in its management and implementation processes. This approach to investigate the change process finds support in the theoretical perspective of phenomenology. Phenomenology attempts to describe and elucidate meanings, behaviour and events as they unfold and as interpreted by research participants (Bogdan & Biklen, 2003; Bryman, 2006; Moustakas, 1994).

The literature in support of phenomenology points out that listening, observing, and forming an empathetic alliance with research informants are important skills for researchers. Several writers, such as Bryman (2006), Marton and Pang (2008), and Merriam (2009) emphasise that inquiry in this domain begins with silence. This attribute allows researchers to enter the conceptual world of their research participants, and if they fail to do so, it may be difficult to understand the meanings informants construct around events in their daily lives. The phenomenological perspective also acknowledges that research informants have multiple ways of perceiving and interpreting reality. Moreover, phenomenologists argue that any understanding of the behaviour of research informants calls for the appreciation of the subjective element of their social action (Creswell, 2007). The procedure of taking the participants' perspective is often expressed in terms of seeing through the eyes of the people being studied (Merriam, 2009). Such a discourse also facilitates first-hand knowledge about the empirical social world in

question (Yin, 2010). It is apparent that understanding a phenomenon from the research participants' perspective requires a close relationship with those being studied. In order to gain the viewpoint necessary for empathy, recommended strategies are in-depth semi-structured interviews and focus group. This qualitative research paradigm therefore exhibits a preference for contextualism and holism (Bogdan & Biklen, 2003; Denzin & Lincoln, 2011). Efforts to view social phenomena through the eyes of the people being studied in their context of operation, tend to favour a research strategy which is relatively open and unstructured, possibly guided by preconceived problems (Merriam, 2009), rather than a predetermined approach.

With regards to qualitative data analysis, several writers (Bogdan & Biklen, 2003; Yin, 2010) see this process as coding. Similarly, Davies (2007) summarises qualitative data analysis as: working with data, organising the data, breaking it into manageable units, synthesising it, searching for patterns, discovering what is important and what is to be learned, and deciding what to report to others. Merriam (2009) perceive qualitative data analysis as an on-going process of bringing order to data by focusing on key issues, themes and categories.

This study included an in-depth examination of a single New Zealand secondary school over a period of two months from October 2015 to November 2015. The school selected for this case study is an independent, decile 10 co-educational school located near Auckland. The college comprises of years 7-13 students and has a roll of approximately 800 students and 65 teaching staff. Merriam (1998) described three research paradigms: Positivist, Interpretive, and Critical. An interpretive research paradigm was used to find out why and how the participants integrate digital technology into their learning and teaching process.

Neuman (2003) has commented that there are several ways to understand interpretive research. For example, it can be a basis for understanding social life because it focuses on the meanings humans use to make sense of their lives. Also, interpretive research is connected to social qualitative research, the purpose of which is to help people to interpret and understand reasons and causes for social behaviour and the construction of social meaning.

Neuman (2003) comments that reality is interpretive and subjective. In this research, the focus was on the participants' reality. Multiple interpretations are a feature of qualitative interpretative research, and responsible social research must acknowledge them. As this research investigated the participants' experience of digital technology and its integration in their school setting, it was appropriate to use a paradigm that supports rich understanding, rather than generalisation.

Qualitative research methods attempt to capture holistic situations and images, usually in the form of words (Yin, 2010). In such a study as this, it is critical that the understandings of the people involved are presented as authentically as possible and so a qualitative approach is being chosen. Qualitative research focusses on processes and meanings that an individual give to experiences (Creswell, 2007).

RESEARCH DESIGN

Yin (2009; 2010) sees a case study as an empirical inquiry that investigates contemporary phenomena within their real-life context. Notably, case-study data is strong in its reflection of reality. Case studies gain their strength from the attention holding that is often in harmony with readers' own experience. Most case study advocates point out that case studies produce much more detailed information than what is available through a statistical analysis. Advocates will also hold that while statistical methods might be able to deal with situations where behaviour is homogeneous and routine, case studies are needed to deal with creativity, innovation, and context (Cohen, Manion, & Morrison, 2000).

The choice of using a case study approach was influenced by the need for studies of the implementation of educational policies in practice (Fullan, 2001). In order to understand the issues in creating the Economics digital classroom in secondary schools in New Zealand, in-depth study has been imperative (Yin, 2010). The classroom research setting is unpredictable; hence, a method that went beyond simplistic interpretation to capture what occurred through the eyes

of the participants was necessary. The final consideration was the readability of the thesis for its audience, which I anticipated would comprise of educational academics, school leaders and teachers. Its findings can be directly interpreted and used immediately in areas such as staff development and school improvement. In this way, this approach provides institutional feedback not only to research participants but also to policy makers, practitioners and researchers (Yin, 2010). Bearing these issues in mind, I chose a case study approach as most appropriate. The case study approach is a flexible method of research as its project design seems to emphasise exploration rather than prescription or prediction, and researchers are free to discover and address issues as they arise in their experiments (Yin, 2009). In addition, the looser format of case studies allows researchers to begin with broad questions and narrow their focus as their inquiry progresses rather than attempt to predict every possible outcome before the study was conducted. This flexibility allows the research design and the research itself to develop as the study unfolds (Cohen et al., 2000). A tentative research schedule guided the initial fieldwork. In this way, the details of the research design evolved as a 'living entity', taking shape throughout the research process (Creswell, 2007).

Limitations of using a case study approach

The relevant literature identifies the following major shortcomings in the case study approach. The following also includes ways in which I will address them.

The small sample of a single case study school in New Zealand raises the issues of reliability and validity of data interpretations and generalisations. Questions may arise regarding whether the findings may apply to other secondary schools since:

1. The case study approach relies heavily on individuals' own viewpoints, thus there can be dangers of bias and prejudice in obtaining data. To overcome this problem interviews and focus groups were used. These helped to demonstrate validity and opened new perspectives about the research topic (Yin, 2010).

2. Limitations of time and resources can also pose problems in fieldwork, particularly with the techniques such as observation and in-depth interviewing, which require a long period of continuous presence in the field. The sampling in the case study school was limited to overcome these problems.

Data Collection

The main data gathering strategies in this research study were interviews and focus group interview. Data was collected from the case study school over a period of two months. These methods of data collection provided rich and descriptive data for meaningful triangulation that strengthened the validity of findings. Triangulation involves “the use of two or more methods of data collection in the study of some aspect of human behaviour” (Cohen et al., 2000, p.141). It allows researchers to contrast and compare perspective variations, discrepancies and contradictions, offering richer data interpretation (Altrichter, Feldman, Posch, & Somekh, 2008). The ensuing section begins by discussing the first data collection method, the semi-structured interview.

Semi-structured interviews

Interviews are used extensively as a data collection method by qualitative researchers (Yin, 2010). The interview is a two-way process in which both the researcher and the participants bring their own preconceptions to the interview. These views affect what they say, hear and report. Their viewpoints may be confirmed or transformed in the course of the interview (Yin, 2013). Thus interviews in this research were taken as conversation pieces rather than in the form of an ‘inquisition’ (Yin, 2009). This approach made it possible to gauge whether the informants understood the issues they raised and why they responded in the manner that they did. Interviews were digitally recorded, subject to the agreement of those involved.

Three interview options exist: structured, semi-structured and unstructured. Semi structured was preferred for this particular project, as it allows the use of closed and open-ended questions and provides the opportunity for negotiation and

expansion of the interviewee's ideas (Creswell, 2007). Semi structured interviews were also considered a highly appropriate method for this study since they offered an opportunity to gain insight on the participants' understanding and thinking concerning the research issue. These interviews can yield rich descriptive data and facilitate the triangulation of data from focus group discussion. Interviews are said to reflect natural human conversations, which often result in the construction of knowledge. They offer a window into the mind, bringing, 'out into the open' or exteriorising what is often hidden away and cannot always be ascertained through observing practice (Bryman, 2006; Partington, 2001).

The selection of staff members for interviewing was based on their role within the school and their use of digital pedagogy. Those interviewed covered a wide range of ideas on the issues in creating the economics digital classroom in New Zealand secondary schools. All interviews were undertaken in a private room, with only the researcher and participant present. The protocol for the interview process were the same for all participants, except when the questions included the role within the school of the participant.

All interviews and the focus group were digitally recorded and transcribed. All of the information was clearly dated and labelled, unedited transcripts were read carefully and the redundant information removed. Transcripts were returned to participants for validation and comments. Their comments and suggestions were taken into account and, accordingly, further additions and deletions were made. This helped to clarify the data.

Focus Group Discussion Sessions

Focus groups are an interaction between the researcher and a group which serves to elicit information and insights in response to carefully designed questions. Focus group meetings as an open-ended discussion group, shaped around a specific topic or purpose, hence the word "focus". The researcher, guides discussions, with conversations typically extended for an hour (Waldegrave, 1999). Although a number of pre-set open-ended questions helps to provide focus, largely the group controls the direction of the discussion.

The dynamic nature of the questions asked by the researcher and the group process produces a level of insight that is rarely derived from 'unidirectional' collection such as observation, surveys and less interactional interview techniques. A focus group meeting is a supplementary method, which provides an additional means of triangulating against a traditional form of interviewing (Cohen et al, 2000). Methods of recording and analysing information gathered during focus groups, and strategies for collecting unbiased information have helped focus group research to gain credibility as an accurate and useful source of information collection (Barbour, 2007). According to Barbour (2007), in focus group session's people naturally interact and are influenced by others, there is less preparation and they are simple to conduct with researchers interacting directly with participants. The data uses participants own words so it's easy to get a clear understanding.

A focus group was crucial to gather information from a selection of students regarding their experience of learning in a digital Economics classroom environment. One focus group discussion session was conducted. The focus group discussion consisted of six-year 11 Economics students. Focus groups work well with around four to twelve people (Bryman, 2006) that is why six people were chosen for this focus group discussion.

The principal supported the recruitment of students. The students were recruited with the help of HOD Economics/teacher. Thirty-one students, the total number of students doing Economics in Year 11, were given the flyer by the HOD Economics requesting them to participate in the focus group interview. Out of thirty-one students, seventeen students agreed to participate in the focus group interview. Each potential participant was numbered, and these were drawn from a box by the researcher, until the desired number of participants was reached. These students were provided with all Participant Information Sheets, which told them about the research study and how the information they provided would be used. They were asked to return parental consent and student assent forms.

All the information was repeated to the participants by the researcher before starting the focus group discussion and consents were taken from each participants. Students were free to withdraw at any stage of the discussion if they so wished to. The six students provided a perspective on student voice, and were

given the opportunity to discuss several issues relating to the Economics digital classroom. It was important that these students as a group had the opportunity to express their ideas freely and openly (Yin, 2013). All interviews and the focus group were digitally recorded and transcribed.

Limitations of focus group discussion

Focus group discussion sessions are not without limitations. In particular, researchers often have less control over group members and the information that they provide. Secondly, the findings cannot be generalised. Data analysis can sometimes be time-consuming. Another limitation is that there is no anonymity that can be guaranteed (Yin, 2010).

DATA ANALYSIS

Creswell (2007) suggests that researchers who face large amounts of qualitative data require an approach to manage and interpret the data collected. The data collected through interview and focus group discussion sessions were first catalogued and then reduced in preparation for analysis.

Therefore, data collection and analysis operated as an integrated process. As advocated by Bazeley (2007), Bogdan and Biklen (2003), and Bryman (2006), the following steps were followed. Firstly, the recorded data was transcribed in its entirety. Then, unedited transcripts were read carefully and minor grammatical errors were corrected. All data collected were arranged under themes of learning, pedagogy, issues and conflicting aims. Any information collected that did not belong to these themes were treated as redundant information and were removed from the analysis. The transcript was then returned to participants for validation and comments. Their comments and suggestions was accommodated and, accordingly, further additions and deletions were made. In this way, most of the uncertainties and complexities were cleared early.

Next the data analysis involved establishing coding categories and sorting out units of data. The data was sorted out, employing the copy and paste technique

into the respective categories that were identified from the literature. This exercise was carried out separately for each research informant. The study records were retained as separate confidential documents.

Open Coding

Open coding is the process of breaking down, examining, comparing, conceptualising and categorising data (Bryman, 2004). Within the context of this research study, data collected through interviews and focussed group discussion sessions used an open coding system. This involved the examination of the data to generate concepts or codes. The data was then compared and similar incidents were grouped and given the same conceptual label (Bryman, 2004; Yin, 2010). This process involved several rounds of analysis and data interpretation in order to obtain consistency with the meaning of concepts generated from the data. After open coding was completed, the process of axial coding began.

Axial Coding

Axial coding is the second phase of the three stage coding process. Axial coding is a set of procedures whereby data is put back together in new ways after open coding. It is the process of developing categories and their sub-categories that involve moving to a higher level of abstraction (Bryman, 2004).

Selective Coding

The coding put the data together in new ways by making connections between a category and sub-categories to develop main themes. These themes are learning, pedagogy, issues and conflicting aims. The themes were further derived from the data analysis of interviews and focus group discussion. In the third phase of the analysis, the data was read and re-read several times and in this way insights were derived relating to the factors identified from the literature. The next stage in the analytic process was the composition of the initial case study report. In this study, report writing and data collection and analysis was integrated and presented in a descriptive and reader-friendly manner.

ETHICS

The standard data collection techniques of interviewing in qualitative research present their own ethical dilemmas (Bryman, 2006). Participants may feel their privacy has been invaded, they may be embarrassed by certain questions, and they may tell things they had never intended to disclose. Creswell (2007) discussed various ethical issues which are critical to researchers, two of which were especially relevant here:

1. Harm to participants: Harm can mean a number of factors: physical harm, stress, harm to participant's development, loss of self-esteem, etc. For this reason, I did not disclose the name of any participants or the school. Also I was responsible for keeping information (including the identity of participants) confidential and secure from appropriation by unauthorised persons, or for purposes other than for the approved research. Thus, I coded data and I removed participant's identities from documentation. I kept all data on my laptop with password protection.

2. Informed consent: I asked the research participants for their informed consent before research began. I gave teachers and students full information to make an informed decision and asked for their consent to be interviewed in writing prior to interviewing. When participants had read the consent form and signed it, I started the interviews. Permission had been sought to record comments and take copies of work. Discussions highlighted the need for consent to be an on-going process, rather than a one-off procedure. It is argued that re-negotiation and clarification is necessary throughout the entire process particularly when working with children. Conscious of this issue, consent had been re-checked whenever data was collected, and the participant's right to withdraw and comments was reiterated (Lodico, Spaulding & Voegtle, 2006).

CONCLUSION

This chapter has provided a description of the case study methodology and the rationale for its adoption. A case study approach has been used to enable an understanding of the digital classroom model from which recommendations could be made to improve teaching practice in the future. The background of the case study is set in the New Zealand educational setting. The rationale behind the data gathering techniques fits into the qualitative approach. The justification for the research questions have been outlined and discussed. The validity and limitations of this research have been outlined. I also conducted myself in an ethical manner.

CHAPTER 4 FINDINGS

INTRODUCTION

This chapter examines the fieldwork findings from the semi-structured interviews and focus group discussion. The findings reported in this chapter reveal the way in which digital technologies are implemented in one case study secondary school.

It describes the interview data responses and highlights the perceptions of the participants, and their recommendations regarding setting up Economics digital classrooms. The chapter also highlights the benefits of using digital technologies in Economics classrooms.

The findings are divided into four major themes:

1. Learning
2. Pedagogy
3. Issues
4. Conflicting aims

The interview and focus group data is organised and analysed thematically. Transcriptions and researcher notes were the main data sources. At first, the data was coded to discover themes and areas of discussion. The coded material was afterwards combined with comments and researcher field notes. The categorisation of the interview questions facilitated a data analysis.

This chapter begins with a description of the background of each participant. Issues common to participants are described under the main themes, with supportive extracts from the interview transcripts. Differences in perspectives and multiple perspectives are also discussed and summarised. This data comes from a focus group with six students (three females and three males), and interviews with the HOD Economics and the Deputy Principal in charge of digital technologies at a secondary case study school in Auckland. Interviews and the focus group took place in September 2015, each for about 55 minutes.

All interviews and the focus group were digitally recorded and transcribed verbatim. The transcripts were analysed by carefully reading the teachers' and students' response to the questions and subsequent coding. The results from the data were collated and analysed to examine the issues in setting up the Economics digital classroom in a New Zealand secondary school. In general, I obtained good data from all the participants, although the quality of the data varied from one participant to another, and this was reflected in their responses. These results are outlined below by describing how digital technologies were used and the purpose of the use. This is followed by the results which focus on issues in setting up the Economics digital classroom.

THE PARTICIPANTS AND THEIR BACKGROUNDS

Focus group participants:

All six participants (three males and three females) were year 11 Economics students who were all keen to use digital technologies in their learning and have been students at the school for the past three years. The students will be referred to as student 1 to 6 for confidentiality reasons.

Interview Participants:

The HOD Economics has been teaching for past ten years at the school. He has a Bachelor of Arts degree in Economics with a graduate teaching diploma. He teaches in a single cell classroom. Desks within the classrooms were arranged in small groups with some individual desks lined up against the far wall. The classroom also had a whiteboard for teaching and learning. The HOD Economics was the only teacher of Economics in this school and believed in the importance of using digital technology in teaching of Economics but rarely used digital technology in his teaching.

The Deputy Principal in charge of ICT at the school had taught for sixteen years and had been at the school as Deputy Principal in charge of ICT for ten years. His job entailed working with teachers, senior leadership and the board of trustees to implement digital technologies in the school. He was a keen user of

digital technology and believed it could make a difference in learning and teaching if used appropriately.

QUALITATIVE ANALYSIS THEMES

For the interview transcript analysis, the interview responses were classified in four themes relating to i) learning; ii) pedagogy; iii) issues; and iv) conflicting aims

These groups were grouped as follows

Table 4.1 Themes arising from interviews

Themes	Categories	Sub categories
Learning	Significance of integrating digital technology in learning	<ul style="list-style-type: none"> - advantages of using digital technologies - relevance to real life -access to information - Negatives /distractions about using digital technologies in learning. - Value of digital technology in Economics classes
Pedagogy	Pedagogical and digital technology competencies Variable teacher practices	<ul style="list-style-type: none"> - teaching methods and classroom practices - assumptions and philosophy of teaching
Issues	Teacher issues External issues Training issues	<ul style="list-style-type: none"> - teaching styles - resistance to change - insufficient computer equipment - slow infrastructure/broadband width and speed - inadequate funding - inadequate communication and coordination - inappropriate school structure - inadequate technical support - training and development programs - constraints to access of resources
Conflicting Aims	School's vision Professional standards	<ul style="list-style-type: none"> - attitude to digital technology - programs for integrating digital technology in curriculum -Evaluation of programs - teacher's, student's role and expectation

DIGITAL TECHNOLOGY AND LEARNING

This theme concerns findings relating to the qualitative analysis of how the use of digital technology enhances learning. Firstly, the interviewees were asked about their perceptions about the significance of integrating digital technologies in the learning and teaching of economics, then their knowledge of previous digital technology integration programs to integrate digital technology in the Economics curriculum. This was followed by issues, which they have experienced in the process and programmes. Finally, they were invited to express an opinion on the value of using technology in the Economics curriculum and on the school's digital technology planning process.

Significance of integrating digital technologies in learning

Both interviewees found benefits in integrating digital technologies in the learning and teaching of Economics, and agreed that digital technologies are an integral part of the society, believing students should be technology literate. The views of the participants about the significance of integrating digital technologies in learning and teaching Economics were positive.

According to the interview participants, the use of digital technologies is to engage students at the school in their learning. This included using digital technologies to focus students, provide variations, help establish an effective learning environment, provide a means for students to learn more and to present information to students in an engaging way. With the use of digital technologies, there is easier access to large stores of information. At the school teachers as well as the students used the Internet to access information. The teachers and students also accessed information from school intranets. The subject departments had shared drives from which the teachers could upload and students could easily download resources from anywhere. With the use of digital technologies, there is easier access to current information on any topics discussed. According to the focus group discussion, the use of digital technology in classes is far more relevant and also resources are easily accessible from any wired or Wi-Fi Internet connection.

The same view is expressed by student 1 (focus group) who also preferred the use of digital technology since it had good storage methods and materials can be easily accessed, and it was mobile. (Student 5)

The use of digital technologies brings an exciting dimension into the Economics curriculum as students and teachers can access current and relevant information rather than theoretical knowledge, which was used in the past and may or may not apply to the current times.

The use of digital technology breaks the barriers of time and space and opens up new and interesting perspectives into modern educational teaching methods, through for example collaborative and constructive learning. Now students are working in teams or a network of students who are helping one another learn and construct new meanings. (Deputy Principal)

The Deputy Principal further said that the students who in the past did not want to be part of the lesson, would now, with the use of digital technologies, are now excited to get online and share what they are learning. As a result, students are becoming more interested in their learning. Instead of the teacher being the only source of help in a classroom, students are able to access school web sites and online tutorials to assist them. Learning did not, therefore, stop at the end of the school day, because students have access to teachers, resources, and assignments via the web and can access these resources at any time. Students, it was reported, can also get help and tutoring at any time, whether from the teacher via email or online collaboration from friends. The use of digital technology thus improves teaching and learning, helping students to be successful with the help of collaboration.

Majority of the Economics curriculum could be better explained and presented using digital technologies than by using any other means. It minimised the time required for planning and finding resources also allowed for amendments to existing resources. (HOD Economics)

PEDAGOGY

This section reports data on the pedagogical approach that teachers adopted and their perceptions and underlying philosophical beliefs about learning and teaching. This related to the following research questions: What perceptions and beliefs do teachers using digital technology have about the learning and teaching process? What changes to their practice and work culture do teachers report from using digital technologies for learning and teaching? What perceptions and beliefs do teachers have of how the use of digital technologies support the learning and teaching process? In other words, the participants were being asked for their perceptions of the views and practices of their colleagues more generally, not only their own views and practices in relation to Economics. The findings must therefore be read in that context.

Pedagogical and digital technology competencies/ Perceived approach to teaching with digital technologies

Pedagogy emerged in this research as a significant factor contributing to the issues in setting up an Economics digital classroom. The focus of this study was on the learning environment mainly concerned with teaching and learning in Economics. A change in pedagogy was identified by the Deputy Principal and HOD Economics as one of the most vital components in the integration of digital technologies in the Economics curriculum. The findings established a common link between successful implementation of digital technologies in Economics and the type of pedagogy used by Economics teachers in class.

In this study, pedagogical change is focussed on the change from teacher-centred instruction with or without digital technologies, to learner-centred instruction in using digital technologies. Changes included, for example, teachers' organisation of learning in their classrooms. In this research, teachers' progression in digital technologies is related to increased confidence and competencies when using digital technologies. Changes in teaching practice were also identified as important. The change in pedagogy, in the context of this

research, related to changes in teachers' practices, specifically change in teaching approaches from instructivist to constructivist.

When asked to describe their teaching philosophy, the HOD Economics and the Deputy Principal described themselves by using the metaphors of instructor, guide and manager. According to the HOD Economics, his job was to teach the students:

I am strong on students' learning and I expect the students to learn but I always try to create a collaborative environment where students can also learn from each other. My role is also to guide students' learning and help them construct their own learning and supporting the students rather than telling them what to learn. We like to create safe and happy classrooms.
(HOD Economics)

According to the Deputy Principal, he is also a manager:

I like to manage the learning environment so students learn effectively and efficiently. (Deputy Principal)

The Deputy Principal and HOD Economics were enthusiastic about using digital technologies in their classes. In sum, they reported a range of pedagogical approaches and beliefs. Their responses loosely spanned a pedagogical and philosophical continuum from instructor, guide to facilitator of learning. According to the Deputy Principal:

The teachers in the school are knowledgeable about how the use of digital technologies improves learning. (Deputy Principal)

Its implementation and the effects it has on students learning are, however fully yet to be seen.

Pedagogical and digital technology competencies

Both participants agreed on the importance of teachers' digital technology skills and that continual training and development were crucial for the teaching profession to improve not only pedagogical skills, but also technical skills.

The Deputy Principal pointed out that teachers must not neglect their pedagogical skills and provided an example, stating that there are many other professionals who are also dependent on digital technology, such as doctors, engineers, and pilots; as such, successful teachers are noted for their ability to integrate technical skills with pedagogy. The HOD Economics also highlighted the importance of the pedagogical skills of teachers: teachers have to be able to plan their lessons according to the methodology of integrating digital technologies into education, be able to control the class, encourage students and increase their motivation, identify individual differences, and acquire the skills of educational evaluation. The Deputy Principal and HOD Economics concurred that, although schools have comprehensive digital technology resources, many teachers do not have the skills required to integrate digital technologies into the educational process. They suggested that teachers' professional development as a means to raise the pedagogical and digital technology skills of the teachers and to increase their confidence in using digital technology in the curriculum.

Digital Pedagogy

According to the interview with the Deputy Principal, HOD Economics and focus group discussion with students it was clear that most teachers at '*Laurel College*' usually gave the use of digital technologies in learning and teaching a low priority. Although some teachers believed that the use of digital technologies could save teaching time, they also found that it took more time and effort in preparing digital technology teaching materials. According to the focus group discussion with students, they all agreed that although teachers may use digital technologies in many topics, they are under pressure to rush through the curriculum and it seems they have no time to think about the integration of digital technology, but might use digital tools if they could.

I would use digital technologies if I had the time, but completing the teaching syllabus on time was always his highest priority. (HOD Economics)

According to HOD Economics, some teachers in the school believed that the use of digital technologies was a technical supplement to their existing teaching. The Deputy Principal agreed, and said that teachers in the school perceived digital technologies as a tool to present teaching materials and information to enhance efficiency and raise student's interest.

Teachers in the school seemed to prefer traditional teaching methods as they regarded these methods as easier-to-use, suitable and reliable for daily teaching. (Deputy Principal)

ISSUES

The research showed that there are a number of issues that may hinder the set up of digital classroom's and therefore be relevant in setting up Economics digital classrooms. The analysis identified a combination of issues and it is important that leaders are aware of these issues, if they want digital transformation to be successful in their school. Both interview participants were of the opinion although the integration of digital technologies in Economics learning and teaching were positive, there were negative issues also mentioned, such as distractions from learning. According to the focus group,

learners can be distracted by games, online chats, music, or other unrelated sites, which can waste a lot of quality time in learning. (Student 1)

Another issue mentioned by the focus group was unreliable digital devices and poor infrastructure in the school that demotivated users and prevented effective learning and teaching. According to the HOD Economics, another issue discussed in the school staff room and at parent teacher conferences was that too much reliance on the use of digital technology actually spoiled people's social skills as it discouraged face-to-face communication. According to the HOD Economics handwritten external assessments and topic tests acts as a barrier in

the successful implementation of digital technologies. However, the interviewees found that these negative matters were considered less of a problem than the benefits they perceived as emanating from use of digital technologies in learning and teaching of Economics.

Teachers' Attitudes towards change

The implementation of digital technologies in schools is a difficult process since it requires pedagogical, technological and managerial change in schools. Teachers' views and attitudes can play a critical role in the success of any digital implementation. Teachers' resistance to change may be considered as one of the reasons hindering the effective implementation of digital technology in a school. According to the HOD Economics in the case study school, resistance from some teachers can be manifested when teachers point out the weaknesses of digital technology, and give various reasons for retaining the existing situation. This attitude was reported to be a contributing factor challenging the integration of digital technologies into learning and teaching. Teachers may also express negative feelings such as tension, impatience and anger about change.

Teachers mentioned classroom management issues that arose from using the devices with a range of students' attitudes' and the challenges these presented. Some teachers indicated that they felt they would benefit from additional time to explore subject-related digital technology implementation issues, or that their mastery of the device was limited due to time restrictions and their teaching load (Deputy Principal).

Further to this the HOD Economics said the teachers' resistance to digital technology implementation was also due to excessive uncertainty regarding digital change and their view that the school was not providing enough personalised professional learning opportunities.

teachers believe that there are barriers to integrating digital technologies into their pedagogy; for example machine failure, an undependable infrastructure, a lack of access to ICT, the need for professional development and a lack of

time, technical support and maintenance. (HOD Economics)

Some staff felt that the digital technology transformation was done to them, rather than done by those affected and in this case for the teachers it's too theoretical. According to the Deputy Principal some staff felt that the digital initiative was temporary and it would stay incomplete and only increase workloads for teachers so they resisted this change.

Teachers commented that technology was expanding so quickly it was very hard to keep up with everything; there is a need for Professional Development (PD) to improve teacher's skills and teachers have asked to make the professional development more relevant to personal needs rather than school needs or ministry's needs. (Deputy Principal)

Teaching Styles

The interviewees said they noted some resistance by teacher's to changing their reliance on book learning in favour of digital pedagogy, as they were more comfortable with book learning. During school visits, the Deputy Principal noted that some teachers were very conventional, and they resisted change and were comfortable with what they were doing, as long as they produced good examination results.

For some teachers, excellence in examination results indicated that the teacher was very effective. (Deputy Principal)

The idea of not using digital technologies in learning and teaching was due to a lack of knowledge about the importance of digital technology, the lack of consistent teacher professional development provided, failure from the school to monitor and provide feedback to teachers about their stages of digital implementation. Further work was required by the school to establish a priority for teacher's attitude to change.

Lack of motivation, lack of appropriate professional development, lack of clarity, lack of connection to classwork, lack of tech support people on site to assist with day-to-day problems. Teachers mentioned classroom management issues that arose from using the devices with a range of students' attitudes' and the challenges these presented. (HOD Economics)

This was also supported by the HOD Economics, who also mentioned that the most serious problem was that many teachers did not have the desire or motivation to integrate digital technologies into the educational process so this would be one issue, which could affect setting up digital Economics classrooms in New Zealand. There is a definite need for more interactive, hands on formal professional development programmes to support teachers and administrators. Teachers must be sufficiently convinced of the importance of integrating digital technologies into education and have excellent support, including technical and motivational support, to be motivated to use digital technology in their classes.

The negative side of devices is the distraction. If you gonna use one word to say that that's something which provides a sense of unease amongst teachers it's the fact that it's very easy to become distracted. You know I always say to teachers who tell me that well you know kids were scribbling on pieces of paper and folding up paper and making paper planes along before we had devices. It is the same thing it's just how you manage it. (Deputy Principal)

In this case, the interviewee considered that teachers' attitudes would be significantly important in setting up an Economics digital classroom in New Zealand secondary schools.

External Issues

The interviewees suggested insufficient systems such as slow broadband speed and limited Wi-Fi network capacity were external issues affecting the

implementation of digital technology in learning and teaching. The lack of digital devices such as inadequate school computer hardware and software were a primary obstacle in implementing digital technology programmes and if things went wrong with the digital devices the school did not have appropriate timely technical support available to help staff and students, which interviewees termed as frustrating and stressful. The issues about implementation come down to staff comfort level whether they are either lesser inclined to want to work with it because the way they have historically practised their teaching and I think that we possibly have issue to do with the fact that we are still very much a single cell classroom school. In addition, I think the architecture does not really support that collaborative constructive sort of knowledge inquiry based learning that we talked about. Therefore, I think those are some of the hurdles that stand in our way. There are barriers to integrating digital technologies into their pedagogy; for example machine failure, an undependable infrastructure, a lack of access to ICT, the need for professional development and a lack of time, technical support and maintenance. Teachers [have] commented that technology was expanding so quickly it was very hard to keep up with everything; there is a need for Professional Development (PD) to improve teachers skills and teachers have asked to make the professional development more relevant to personal needs rather than school needs or ministry's needs.

Further, participants regarded this situation as ongoing, due to the large increases in class sizes. The Deputy Principal and the HOD Economics both highlighted the shortage of software programs necessary to enrich the school curricula. The configuration of school buildings was another external issue as this particular school still had wooden walls separating classrooms. Since the classrooms are far away from each other at times there is lack of network or Wi-Fi connection reaching from one room to the other which acts as a hindrance in digital technology implementation.

Financial Constraints and Access

The Deputy Principal reported that implementation of the latest digital technology at Laurel College is slow due to financial constraints. The high cost of online

services, network infrastructure, hardware and software was also a barrier to digital technology implementation at Laurel College.

Funding must be made available to support the digital technology goals of the school. Without finance, the goal remains an ideal that will not be achieved, as you need money to buy capital equipment's. (Deputy Principal)

Software blocking access to certain websites, makes using the Internet with difficult for the students. The decision on what was blocked and procedures for accessing websites that have been blocked are part of a school's policy and procedures. According to the HOD Economics, access to data projectors was important for the teachers who wanted to show their students PowerPoints, multimedia presentations or websites, or to share student work in a visual way. These were not available in all classrooms and acted as a barrier to teachers using digital technology in classes.

Poor internet connection when the whole school is logged on. Poor capability of the school server to manage all documents and requests when the whole school is logged on. (HOD Economics)

Structures

Another significant barrier to the use of digital technologies identified by the Deputy Principal was aspects of the school structure that they had to work with in. Timetabling, room allocations, school curriculum and length of lessons acted as a barrier to enabling the use of digital technologies within the lessons. The school was a conventional single cell school. The classrooms could not be altered easily, and the school lacked suitable computer rooms or pods due to financial constraints. The school curriculum and timetable according to the Deputy Principal was dictated by a strong focus on students passing examinations—the sign of an effective school. Therefore, to minimise time wastage in logging in to digital devices, the completion of the curriculum was being given a priority at Laurel College regardless of whatever means. The use of digital technology tools was therefore a secondary priority. The vision of the school is to we do not have a compulsory BYOD program, as such what we do have is we have particular

subject where there is compulsory need for laptops. We have policy that encourages students to bring devices and is more centred on the individual teacher. When they feel comfortable to enable that learning to take place that device to be brought to class rather than being a standard part of day-to-day lessons.

Professional Learning and Development Issues

According to the Deputy Principal and HOD Economics, professional learning and development for teachers was on going and difficult. They discussed several issues regarding training. Finding suitable external guest speakers was always an issue for the college. Sometimes the external guest speakers were very theoretical and boring so the buy-in rate from teachers was low. Teachers were keen to learn how to use technology, rather than understanding what and why of technology use and most professional learning failed to address this problem. Secondly attending external professional learning courses was expensive. Laurel College provided in-house training from staff to staff, according to the Deputy Principal, but since this was not compulsory, staff attended these sessions based on when and if they needed it.

We run regular professional learning, we have we are in unusual situation because we are part of the large group of schools...[and have] great support mechanisms... we have someone who is dedicated to professional development to learning for ICT. So that particular individual comes out to schools and will spend dedicated time with individuals who have specific ICT requests. Tends to be once a fortnight, that person would come around...rather than...do a formal PD [we offer PD] on a needs basis. (Deputy Principal)

The HOD Economics agreed that the school did not have a specific time allocated for teacher professional development. Whenever there is an external guest speaker available teachers are informed and since attendance is optional, many teachers prefer to do own work instead.

Digital technology professional learning opportunities seemed unable to improve teachers' digital technology integration. The teachers criticised the current mode of professional development in digital technologies as not being as effective as it should be. Some teachers thought that standardised digital technology training did not help the individual teacher.

...digital technology used to be done on a big scale, to serve many people at a time. It was a kind of mass production, and therefore hard to produce an effect on individual teachers. (HOD Economics)

This participant thought that the current professional learning approach did not help teachers develop good digital technology pedagogy.

CONFLICTING AIMS

School policies and procedures were found to be a barrier to digital technology use in the school. Blocked websites hindered teachers and students from accessing resources. The HOD Economics said some teachers used the technicians to gain access to the blocked sites they needed, while some teachers use proxies to access blocked sites.

Structural barriers were not limited to the school system. The qualifications system also held barriers to the use of digital technologies.

the National Certificate of Educational Achievement (NCEA) external examinations, school examinations and even the internal assessments were largely hand written and internal assessment submissions were accepted as handwritten by New Zealand Qualification Authority (NZQA).(HOD Economics)

However, NZQA is planning to have all assessments digitally marked by 2018. It can be seen that structures in schooling and the wider education system, can inhibit or enhance the use of digital technologies by teachers.

School vision

A school's vision, expectations, policies and actions are driving forces in the use of digital technologies in teaching and learning. Fullan (2013) explains that any successful implementation of any change process relies on key themes such as vision building and initiative-taking, evolutionary planning, staff development, decision-making, problem solving, teamwork, monitoring, supervision and restructuring that focus on staff development. Laurel College also has a vision, expectations, policies and actions; however, its vision was not strictly followed by teachers and students in regards to the use of digital technologies in teaching and learning. Conflicts arise because of the need to achieve results in examinations.

the vision as far as technology is concerned again its really to maximise the potential that technology brings but to let leave it as a choice for either the students or for the teacher as to support the learning. Therefore, they have not made a stand. (Deputy Principal)

Although digital technologies were always promoted as an interactive tool for teaching and learning, according to the HOD Economics some teachers did not see digital technologies as the means to create a more interactive classroom.

According to the focus group discussion it was pointed out that some teachers appear too comfortable with their way they are teaching and some students are also comfortable with this, as for them examinations are important no matter what. As a result, digital technology change will not have an impact on their teaching and learning.

In general, in our school we don't use a lot of digital technologies in the classroom. It will be cases in which PowerPoint presentations and the whiteboard are used as projectors and we do have some of the learning based on that. Specifically, in Economics we generally use the PowerPoint format of learning but in the other classes not too much technology. However, some people will choose to use their laptops rather than writing with pen and paper. (Student 1)

I think what we expect to learn, we are pushed to learn and what we want to learn and we are also pushed to learn what we didn't want to learn originally but then pushing ourselves in terms of giving ourselves more challenges. So I think we given lots of opportunities if we take them to learn more and learn exactly what we want to learn. But then going back to the social media vs learning personally I don't use social media because I don't think I agree with it but I do think there is probably a disconnect between how much time we use in general social media as a learning as opposed to how much time we use it for learning. Social media can be a good tool in some cases but then again it is a distraction in lots of cases as well. (Student 5)

CONCLUSION

This chapter focused on identifying the issues in setting up an Economics digital classroom in a New Zealand case study school. It has also indicated, by way of general comment by the participants towards the attitudes and practices of some of the teachers at the school that setting up digital classrooms is challenging. The findings of this study were presented under themes of learning, pedagogy and issues. The findings showed, through the voices of the interview and focus group participants, that the teachers' teaching paradigm and pedagogy did not change because of the adoption of digital technologies by the college. The study reveals a gap between official school expectations of digital technology use and the teachers' actual digital integration in practice. Consequently, according to the participants, some teachers at the school tend to be passive and less risk-taking and feel anxious about fulfilling the mandated requirement of digital technology use. Although resources had been invested in digital technology in this school, the equipment was not necessarily seen as encouraging digital integration.

Some teachers also found that the present digital technology teaching materials did not suit their needs and support from the school was insufficient. The views of the participants of this study suggested that

teachers at the college held beliefs and perceptions that affected their pedagogies. (Deputy Principal)

Digital technologies were usually perceived as a technical supplement to present teaching. According to the participants, teachers at the college often used multimedia as a tool to present teaching materials and information and as a way to raise students' interest. Although the teachers had abundant opportunities for professional development in learning with digital technologies, the professional development was imposed and did not meet individual needs.

CHAPTER 5 DISCUSSION

INTRODUCTION

This chapter discusses the findings reported in Chapter 4 in relation to the literature as presented in Chapter 2. The discussion chapter is organised around the research questions and the four major headings discussed in the findings.

The research questions are:

- What are the reasons schools might adopt digital technology?
- What role is played by school leadership when implementing digital technology?
- What are the challenges associated with implementing digital technology in a secondary Economics class?

The four major headings discussed in the findings are: learning, pedagogy, issues, and conflicting aims.

This study investigated the issues in setting up an Economics digital classroom in a New Zealand secondary school. The research study considered issues that may hinder and act as barriers in setting up such a classroom. The study also considered views about the implementation of digital technology in Economics classrooms. These issues and views were analysed from the point of view of the Deputy Principal, HOD Economics, and a focus group of Economics students. It is expected that the research findings will provide a direction to deal with issues that are brought up through the research. This study was guided by the following research question: What are challenges and opportunities of setting up an Economics digital classroom in a New Zealand school? To answer the question, a case study approach was used, with one participating New Zealand secondary school. The individual participants were interviewed and the students engaged in a focus group. All participants informed this study of their views and intentions with regards to setting up an Economics digital classroom. The data gathering made it possible to assess the digital technology capabilities and expertise of Economics teachers and students at the school.

LEARNING AND DIGITAL TECHNOLOGY

This section discusses teacher and student perceptions of using digital technologies in their learning and teaching process, and the benefits of setting up Economics digital classrooms. The participants interviewed saw benefits in integrating digital technology in learning and teaching in the current times as they offered new ways for students to represent their thinking, helping them clarify ideas, make connections, identify patterns and reflect on their work. Students could save, build on previous work, use scaffolds and templates designed for particular learning outcomes, and work collaboratively or individually. The view of the HOD Economics was that the use of digital technology assists with teaching of the subject, for example, live economic data can be obtained for classroom discussion. It is interactive, a two-way virtual space which according to HOD Economics, makes the subject more interesting. Storage capacity was good, which is more efficient, easily accessible and also saves carrying heavy books around. The same view is expressed by student 1 (focus group) who also preferred the use of digital technology since it had good storage methods and materials can be easily accessed, and it was mobile. Student 2 said with the use of digital technology it is now possible to access across multiple devices. Most devices were reliable according to student 3. Students and teachers saw learning and teaching with digital technology as an efficient and easy way to learn. Anytime and anywhere, access of resources was a popular reason for students and teachers to get inspired about digital technology. According to student 4, writing in the book was boring, whereas writing with a laptop was a lot quicker, and more efficient as typing is faster than writing. Also, you have a record of it. It makes learning more interesting and fun.

According to the Deputy Principal, digital technologies offer users access to rich multimedia, providing them with a variety of ways to communicate and collaborate with others. It is a very powerful way to learn authentic information. The use of digital technology enables students to learn at their own pace. For example, almost all applications allow for individualised instruction. Students could learn according to their abilities and needs. This form of teaching also suited teachers as it gives them the time to work individually with students who

may be struggling. However, the participants mentioned the positive aspects of using digital technology, in practice, digital technology was used as a replacement tool rather than to enhance learning and teaching at Laurel College.

According to Lee (2006), digital technologies develop and enhance students' ability to become effective learners, communicators, collaborators and ethical citizens. They offer new ways for students to represent their thinking, help them clarify ideas, make connections, identify patterns, and reflect on their thinking across the curriculum. Students can save, build on previous work, use scaffolds and templates designed for particular learning outcomes, and work collaboratively or individually (Pritchard, 2007). Digital technologies may also be a significant motivational factor in students' learning, and can support students' engagement with collaborative learning (Beetham & Sharpe, 2013). However, the motivation, engagement and collaboration needs to focus on classroom learning rather than social learning or to pass time which is a challenge that teachers and leaders face. Teachers and leaders need to use digital technology to enhance learning rather as a digital tool or simply because they are under instruction by the school. Digital technology should be used in a classroom space to encourage creativity and not to keep students entertained. If teachers find it difficult to have students use technology to produce good work, then the digital technology should not be adopted. Any assessment of digital technology in the classroom must consider how the digital tools enhance, extend, and enable that relationship between teacher and student (Bower, 2008).

In the literature review and the research findings, there is no doubt that the use of digital technology in learning and teaching engages, motivates and can enhance students learning. However, this benefit is only an advantage for learning if the use of digital technology becomes effectively aligned with what is to be learned. It is the pedagogy of the application of technology in the classroom which is important and not the tool itself. In other words, the how rather than the what, needs to be looked at. Digital technology should not be introduced in a vacuum. This is the important lesson emerging from the research. The research

findings indicate that the use of digital technologies in classes produced lower levels of engagement and improvement compared with other interventions such as writing in workbooks, group discussions and peer tutoring.

The participants noted that despite the benefits of using digital technology in learning and teaching, they have found the disconnections between the vision of the school in the use of digital technology, implementation process and the outcome. There is a huge gap between what is said, expected and what is really happening in the learning and teaching process. The Deputy Principal was of the view that digital technology can enhance learning, yet he noted that the school has made the use of digital technology in classrooms an option for teachers and students. He reported that the perception of teachers and students towards digital technology use is positive; however, the practical use of digital technology is lagging behind. The participants said that poor infrastructure such as Internet speed, and availability of laptops or computers per teacher or student is hindering the buy-in rate. Perhaps there needs to be strict policies and expectations of teachers and students in place from the school leader. Despite the potential of the use of digital technology to enhance learning, there was little evidence to indicate that there is a change in pedagogy with the knowledge and perceptions that teachers and students had of the use of digital technology to transform learning. Laurel College has computer labs, other hardware and software but these seem to be used in a way that will bring little change in students' learning in challenging ways.

From the research findings and literature review, it is concluded that leaders must play a more active role in implementing digital technology effectively. The essence of leadership is to produce a change in attitudes, feelings, thinking and performance with teachers and students. Leaders must make it clear that any digital technology plan is focussed on student learning needs. Participants expressed that unless school leadership see the importance of digital technology, real changes will not take place. There is an increasing need for digital wisdom and intelligence as we enter a new learning environment for the future. From this research it can be said that the transformation in terms of implementation of

digital technology is still in its infancy in this school. While there was talk by the participants of the digital technology use having a lot of potential, many traditional methods of teaching still prevail in the teaching of Economics, according to the participants. Nevertheless, no digital technology can replace tailored attention, encouragement and inspiration. Hence, attempts to use digital technology as a stand-in for capable instruction are bound to fail (Bingimlas, 2009).

ISSUES IN CREATING ECONOMICS DIGITAL CLASSROOMS

According to the deputy principal, there is potential for creating Economics digital classrooms, but there are many demotivating factors: poor Internet connection, poor capability of the school server to manage all documents and requests when the whole school is logged on, and lack of tech support people on site to assist with day-to-day problems.

According to the HOD Economics, the issues are poor infrastructure including broadband speed, not enough laptops or computers for teachers and students, no clear guidelines or communication regarding implementation of digital technology for classroom use and unsuitable school for effective digital technology implementation. For example, old traditional buildings, white, green, black boards, desks and chairs lined up, one mobile data projector shared between classes and few power outlets, all prohibit digital use. This all illustrates that Laurel College faces a challenge of building capability. While the Deputy Principal and HOD Economics both agree that a number of teachers have already adopted digital technology in their teaching, the majority are still working towards this and do not seem to be there yet. This may be due to a lack of confidence in using existing digital technology.

Another issue from the findings was that of untargeted resources and resource activities. It is good that resources are developed for assistance, but are not targeted to specific classroom use or curriculum changes. Therefore, the appropriate resources need to be identified, developed and supported which take into account the latest curriculum changes. Unless the importance of digital

technology is realised by all stakeholders in education, changes will not occur. A sample of teaching resources and exemplars is needed to support teachers in the classroom. A cohesive vision across all levels of education, including parents, will also help everyone's attitudes towards the importance of digital technology.

Teachers are more likely to use digital technology in their teaching practices if they know clearly the school's vision and the expectations of teachers in regards to digital technology (Downes, 2006). Thus the school vision and strategic intent, should take account of digital pedagogy. All stakeholders need to be involved (Parry, 2009), but the research findings and the literature review suggest that most teachers at Laurel College are unaware of what the school's vision and strategic intent is, and they are just using digital technology because the school wants them to. Change happens when people are expected to do things differently and if they share the vision with passionate and inspiring colleagues who encourage and assist their participation (Fullan, 2013).

Teachers are more inspired if they belong to a professional learning community that shares their vision, and have an opportunity for reflective practice (Bush, 2011). To provide teachers with devices or other digital tools and applications is futile, if they don't know how to use them correctly (Conole & Koskinen, 2011). School leaders should thus take into account the appropriate professional learning opportunities as indicated by teachers.

McIntosh (2007) claims that school leaders need to tell the staff and students clearly, about the school's vision and expectations in regards to digital technology implementation. They should spread the word and establish professional learning communities. Clear messages from the top are effective, especially if all teachers and students can understand. School leaders need to be clear about the school's vision, intent and their role in making it happen. The main challenge lies in changing attitudes and behaviour in regards to digital technology implementation.

MONITORING AND EVALUATION OF DIGITAL TECHNOLOGY PROGRAMS AND IMPLEMENTATION

Today, digital technologies provide ubiquitous and instantaneous access to unlimited information resources that are transforming schools and the educative process. Recent advances in digital technologies are having a strong impact on teacher planning and professional learning and development (Putnam, 2008). Schools should allow teachers and learners the freedom to explore potential new uses of devices as well as combinations of technologies into digital environments (Aktaruzzaman, et. al, 2011). In this way, teachers and learners will become more familiar with new and advanced digital technology tools and new pedagogies and are more likely to use it in Economics learning and teaching. This is a challenge for schools, which requires leaders and teachers to think differently about how they think, how they teach, and how they and students learn. From the research findings according to the Deputy Principal, the school runs regular professional learning programmes for teachers by teachers. At Laurel College teachers with more expertise in digital technology run professional learning sessions for other teachers. Guest speakers from outside are also invited to take digital technology professional learning sessions. The Deputy Principal advises the senior leadership team of the direction to be taken in regards to digital technology implementation. He has looked at a variety of schools in New Zealand to see whether digital technology implementation success has been achieved and what best-fit model is there that would suit their school.

According to the HOD Economics, digital technology helps users to do and achieve more, to work smarter and more efficiently. Digital technology helps teachers and students by providing total access to content, curricula, and peers. Teachers can evaluate student comprehension, encourage collaboration and monitor student's activities. A challenge for all schools regardless of what digital technology can offer or currently offers, is the ability to explain the impact of digital technology on learning. Access to and learning about new digital technology tools is easy. It is also easy to measure in terms of costs of devices and infrastructure, time, professional learning opportunities, staff participation, and student interest. The difficulty is measuring whether it enhances student-learning outcomes.

Students can appear to be more motivated and engaged when using digital technology, but whether digital technology also enhances learning, is yet to be seen and documented (Organisation for Economic Cooperation and Development (OECD), 2015).

Today's world is characterised by an abundance of information and the latest technologies, therefore, it is important that all involved in digital pedagogy are proactive and take a leadership role in identifying how digital technology can enhance teaching, learning and assessment. Digital technology implementation can be challenging to achieve. Schools like Laurel College need guidance and support to achieve it. From the findings, it can be said that Laurel College is not clear as to what digital technology implementation looks like and therefore the teachers are unsure how to achieve it. Teachers and leaders including the school principal, should be instrumental in ensuring that digital technology implementation is achieved. There is a need to ensure that all teachers are equipped with the knowledge, skills and confidence to integrate digital technologies into their practice. School leaders including the principal have to provide leadership and take ownership of this challenge so that Laurel College can achieve correct digital technology implementation and equip learners with the digital competencies.

Fullan (2001) suggests three interacting phases of the change process: initiation, implementation, and institutionalisation. The initiation phase covers the period from the first intimation of a change to the decision to proceed with implementation. In the initiation phase, according to Fullan (1991), the combination of three R's of relevance, readiness and resources are critical as initial considerations. Here relevance encompasses the interaction of need, clarity of innovation, readiness on the other hand, includes the practical and conceptual capacity of practitioners and the setting in which change will take place to initiate and develop a preferred innovation and the provision of support is an important part of the change process, hence requiring the accumulation of resources. It was noticed that at Laurel College there was a lack of evaluation process, feedback sessions or a clear vision to ensure quality teaching is done with the help of digital technologies. Laurel College did not have a strategy for

monitoring and evaluating digital technology implementation. The central role of evaluation in monitoring implementation and ensuring that the school is making progress towards digital technology implementation is important (Underwood, 2009). It is also vital that teachers and leaders through distributed leadership share the innovative practices with other teachers in the school to enhance the overall digital technology implementation. The phases stated should be followed for effective implementation of digital technologies.

Most times, it is assumed that the presence of digital technology devices and tools (i.e. computers, broadband, etc.) in a school will lead to digital technology implementation. However, according to the Deputy Principal the implementation of digital technology into teaching, learning and assessment is a challenging process. Effective digital technology implementation involves redesigning educational infrastructure, teacher training, curriculum structures and materials, classroom practices and modes of assessment (Parry, 2009). Ongoing evaluation of digital technology implementation is an important element in improving practice and outcomes. Reading the findings and literature review suggests that there is a need for experimentation and reflection in relation to how digital technologies can be integrated into teaching and learning. This would allow teachers to reflect on their practice and to share it with colleagues, thus creating a pool of teacher-made resource banks (Hislop, 2013).

CONCLUSION

The participants were positive about creating an Economics digital classroom. They tried to integrate digital technologies into their planning and where possible, tried to implement in their classrooms in a way that enhanced student learning. Teachers and students interviewed identified useful approaches for effective digital technology implementation or setting up an Economics digital classroom in the future. There are issues in setting up such classrooms, however, and teachers and leaders must understand that there are inherent risks associated with using technology in most environments and leaders must acknowledge that for many teachers this may be intimidating. Schools could

encourage the use of a taxonomy such as SAMR (Substitution, Augmentation, Modification and Redefinition) to assist authentic integration of digital technology into the curriculum. Any digital transformation in schools requires strong leadership. All leaders need to have higher levels of digital technology competence and a real understanding of what a school or Ministry of Education are trying to achieve with the help of this digital transformation. One other problem that was discussed is that some leaders who initiate the digital transformation change do not stay long enough in the same school to take the change to completion. The problem here is that the project that was started by the leaving leader, at times are wasted, as the new leader has his or her own plan in mind. This frustrates the teachers and hinders effective implementation of digital technologies in schools. The need for positive leadership drive to see that everyone is working and contributing towards digital technology transformation is essential.

CHAPTER 6 CONCLUSION

INTRODUCTION

This study set out to investigate why the Economics digital classroom is necessary, analyse what issues digital technologies in Economics create for teachers, students and leaders, and to examine the critical role of school leadership in creating the Economics digital classroom. This study focused on activities largely in the implementation of digital technologies in the Economics classroom.

This chapter concludes the research questions that were studied through a research methodology of interviews and focus group discussions. It begins with a review of the study, followed by the conclusions from the research study and issues in setting up Economics digital classrooms, using one New Zealand secondary school as a case. The strengths and limitations of the research are stated and recommendations are made.

The research questions were:

- What are the reasons schools might adopt digital technology?
- What role is played by school leadership when implementing digital technology?
- What are the challenges associated with implementing digital technology in a secondary Economics class?

In finding the answers to the research questions three themes were found to be significant in addressing the issues associated with setting up an Economics digital classroom in New Zealand: that of digital technologies, change management, and leadership. In looking at the findings from the case study school, one factor that affects setting up an Economics digital school, is the role of school leadership in terms of both school principal and teachers as well as the vision of the school in terms of implementation of digital technologies. The attitudes, views and actions of school principals

surrounding new digital technologies will encourage and support teachers as they implement new technologies in their learning and teaching and explore new tools. Teachers must feel at ease when trying new digital tools into their practice (Lee, 2006). However, it is not easy to get teachers who do not want to give up their worksheets to adapt new ways of teaching via digital technologies.

The first conclusion is that before setting up an Economics digital classroom, leaders and teachers have to be very clear about the vision of the school in regards to digital technologies in learning and teaching. This research has found that teachers and leaders are somewhat confused about their school's vision and the importance of this vision in their teaching. They are also uncertain how to integrate the vision in learning and teaching. This confusion had led to digital technology being superficially implemented in their school. Literature and findings from the research have shown that poor planning and vision can lead to stakeholders misunderstanding the rationale behind digital implementation and as a result have produced frustrating results for teachers, parents and students. School leaders must therefore ensure that the relevance of any new initiative is properly communicated to staff and students and that they are ready for change to occur. It has been found from research findings and literature review that stakeholders are not ready for the change due to poor know how, or a conventional mind set. Finally, as I have stated above, proper up-to-date resources need to be available to staff and students.

A second conclusion from both the literature and the research findings is that relational factors may have been neglected in order to carry out the implementation process. Teachers were not given adequate time and support to implement digital technologies innovatively. The implementation of digital technology cannot take place in isolation from teachers. Thus, leaders need to allocate time for staff to implement digital technologies appropriately and also to improve the quality of teaching and learning. From the research findings it can be concluded that digital technology has not yet delivered its potential and the school under study has not yet entirely understood what the implications of digital technology are for teaching and learning.

The third conclusion from this research is that in the case study school, leaders have not provided teachers with adequate resources and suitable infrastructure. This includes insufficient computer labs, pods, or mobile devices. The speed of the Internet was also another frustration teachers and students had in using digital technologies in the daily classroom. The case study school operates on a tight budget and the Ministry of Education/Government has a role to play to ensure that schools have sufficient funding for the physical environment required to implement digital technologies.

Recommendations

These recommendations are based on the conclusions and relate to the ways schools may change in regards to setting up an economics digital classroom.

It can be concluded that leaders must clearly communicate the school's vision to stakeholders in order to make implementation effective and must provide support in the form of appropriate professional development that matches individual and school needs. Furthermore, schools must evaluate the success of their digital technology implementation into learning and teaching by either quantitative analysis or qualitative analysis. In constructing the vision in regards to implementation of digital technology school leaders and teachers need to think deeply about the reasons for setting up an economics digital classroom or implementing digital technology and how it will enhance learning and teaching in the school. Therefore, it is evident that schools need instructional and caring leaders who are ready to support their teachers. Staff and students needs motivation and support in digital technology implementation and here school leaders play a critical role.

The second recommendation is that the responsibility for effective implementation, evaluation and monitoring should be delegated to a digital pedagogical specialist team of teachers responsible for working with students and teachers, and even parents, to communicate, support and implement effective digital technology implementation in schools. It is not suitable to

delegate the responsibility of digital technology implementation to a person who lacks understanding of the digital technology implementation process.

A final recommendation is to ensure that digital technologies are used meaningfully to improve learning and teaching. A key part of this is to support teachers and students with effective professional development programmes or professional learning in school or outside school. A school appraisal system can be used effectively to monitor how digital technologies are used in learning and teaching rather than as a means to only complete the goals set by the school for the year.

For any initiative to work effectively teachers, need to be supported and encouraged to take risks and make mistakes and be supported through professional development or professional learning sessions. Everyone needs to be able to measure and see a change in his or her practice with the help of evidence.

Limitations of the study

The first limitation is taking one school as a case study school for this research study and the small sample size. Had more schools and more participants been engaged, the results might have been different. It is possible that the findings and the conclusions do not accurately represent the perceptions and experiences of all stakeholders who use digital technologies in education. The timing of the research could also act a limitation. I did the interview in a day during the second to last week of Term 2. Had the data been collected over a longer time, more evidence could have been revealed. The third limitation is that the school chosen was not a digital technology based school so it was hard to study how digital technologies are being used in this school. This particular school studied still has traditional settings. A more suitable, digitally advanced school may also have provided different results. The fourth limitation of the research study was that the main data collecting methods was interviews and focus group interviews, whereas a mixed method design may have provided more findings.

Strengths of the study

In the present context of a knowledge explosion and advancement in digital technologies, the study will provide students and teachers, leaders and other members of the stakeholder community the opportunity to construct their own reality with particular reference to the subject under study. The study also expects to provide practitioners and policy makers with relevant information and insights that will contribute to solving the issues in creating the economics digital classrooms in secondary schools in New Zealand. The study will contribute to understanding the issues in creating the Economics digital classrooms in secondary schools in New Zealand and contribute to the international literature on the management and implementation of digital technologies in education.

Areas of further research

An area for further research could be an investigation into how, and what students think about, digital technologies being used to enhance their learning. While there is literature regarding the benefits of implementing digital technology in schools, whether students are using it effectively to support their learning is yet to be researched on a bigger scale.

Another area for further research could be the effectiveness of professional learning sessions in school in regards to implementation of digital technology. In particular, whether professional development sessions improve teachers' planning, learning and teaching. In reference to the support given from the senior leaders in the school, is the question of whether enough time is allocated to improve teaching and learning. Another area of further research would be to look at how significantly students' access to digital technology has changed their expectations as learners. Finally, another area of further research would be to look at how the appraisal systems used in school incorporates the implementation of digital technologies and how effectively this implementation is measured.

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APPENDICES

APPENDIX 1 INTERVIEW QUESTIONS

Interview schedule for Principal

1. What do you think are the benefits and draw backs of using digital technologies in the Economics classroom?
2. What is the vision of your school with regards to the implementation of digital technologies in the curriculum and particularly in Economics? Where does the digitisation of Economics fit in your school's vision and strategic plan?
3. How have your teachers been prepared prior to the implementation of digital technologies and related pedagogy?
4. What input do/did you have into this implementation?
5. What input do/did the teachers have?
6. What input do/did the students have?
7. What implementation issues did/are you experiencing with the use of digital technologies in learning and teaching generally, and in creating the Economics digital classroom specifically?
8. How did you overcome/ are you addressing these implementation issues?
9. How do you think student outcomes are improved by the implementation of digital technologies in learning and teaching generally, and in by creating the Economics digital classroom specifically?
10. What future improvements could be made to the digital technologies programme in your school generally and in Economics specifically?
11. What implications are there for school leadership in implementing digital technologies into the economics curriculum?

Interview schedule for HOD Economics/Teachers

1. Do you use any digital technologies as a teaching tool? If yes, which one? And why? And how often? If not, why not?
2. How does digital technologies influence teaching and learning in your school generally and your department specifically?
3. What plan does the Economics/ Commerce Department at this school have to integrate digital technologies into Economics teaching and learning?
4. What do you think then of the importance and value of digital technologies in teaching and learning economics?

5. What are your personal strengths and/or weaknesses in using digital technologies in teaching and learning and in creating a digital economics classroom?
6. How are outcomes for students influenced by the implementation of digital technologies in learning and teaching or by creating the Economics digital classroom?
7. What input do/did you have into the structure of digital technologies and associated pedagogy in your school generally and your department specifically?
8. What are the issues, problems and challenges you face or have faced during your use of digital technologies in Economics teaching or in creating the Economics digital classroom?
9. What are the major factors that facilitate and/or impede the successful implementation of digital technologies in teaching and learning of Economics?
10. What improvements would you make, if you could, to the implementation of digital technologies in Economics teaching and learning or in creating the Economics digital classroom?
11. Please tell me about the professional development courses or training you have received in utilising digital technologies?

Focus Group schedule for Students

1. Thinking across all your classes for now, what are the digital technologies you use specifically as a learning tool?
2. Discuss with me the amount of time you use these technologies, and what makes them useful for learning.
3. What motivates you to use digital technologies in your learning?
4. How do digital technologies help you to learn?
5. What sort of things made it easier/difficult for you to use the digital technology?
6. What influence does the use of digital technologies ~~in~~ have on the way you learn?
7. What do you think are the benefits and draw backs of using digital technologies in Economics specifically?
8. Please comment on what works well and what works less well when it comes to using digital technologies in the Economics classroom.
9. Are there any comments or suggestions you think might help me in better understanding the use of digital technologies especially in Economics?

APPENDIX 2 ETHICS APPROVAL



A U T E C
S E C R E T A R I A T

A .

2 December 2014

Leon Benade
Faculty of Culture and Society

Dear Leon

Re Ethics Application: **14/302 Creating the economics digital classroom in a New Zealand secondary school - a case study.**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

Your ethics application has been approved for three years until 2 December 2017.

As part of the ethics approval process, you are required to submit the following to AUTEC:

- A brief annual progress report using form EA2, which is available online through <http://www.aut.ac.nz/researchethics>. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 2 December 2017;
- A brief report on the status of the project using form EA3, which is available online through <http://www.aut.ac.nz/researchethics>. This report is to be submitted either when the approval expires on 2 December 2017 or on completion of the project.

It is a condition of approval that AUTEC is notified of any adverse events or if the research does not commence. AUTEC approval needs to be sought for any alteration to the research, including any alteration of or addition to any documents that are provided to participants. You are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

AUTEC grants ethical approval only. If you require management approval from an institution or organisation for your research, then you will need to obtain this.

To enable us to provide you with efficient service, please use the application number and study title in all correspondence with us. If you have any enquiries about this application, or anything else, please do contact us at ethics@aut.ac.nz.

All the very best with your research,

Kate O'Connor
Executive Secretary
Auckland University of Technology Ethics Committee

Cc: Shraddha Nand Sharma s.sharma@bdsc.school.nz

APPENDIX 3 PARTICIPANT INFORMATION SHEET

Participant Information Sheet



Date Information Sheet Produced:

16/07/2014

Project Title:

Creating the Economics digital classroom in a New Zealand secondary school - a case study

Dear Teacher,

1. Invitation

My name is Shraddha Nand Sharma and I am an MPhil student at AUT. I am a head of Economics in a New Zealand secondary school, and as part of my ongoing professional development, I am investigating how digital technologies help improve student learning in Economics in one New Zealand secondary school. I also wish to critically examine the issues for teachers, students and leaders that arise when creating the Economics digital classroom in a secondary school.

This request is for you to participate in an interview to be conducted by me at your convenience between now and end of term 1 in 2015. I would like you to provide information based on your expertise in the field of digital technologies. I am asking for your help in order to determine the current state of pedagogical approaches to and the use of digital technology in the teaching of Economics. Your participation in this research is voluntary and confidential. You may be assured that neither your school nor your name will be identified in any report of the results of the study. Participation in this phase does not obligate you to participate in any follow up however should you decide to participate in any follow- up, your participation remains voluntary and you may withdraw at any time.

2. What is the purpose of this study?

The objectives of the study are to investigate why the Economics digital classroom is necessary, analyse what issues digital technologies in Economics create for teachers, students and leaders, and to examine the critical role of school leadership in creating the Economics digital classroom. It also expects to provide practitioners and policy makers with relevant information and insights that will contribute to solving the issues in creating the Economics digital classrooms in secondary schools in New Zealand. The study hopes to contribute to the international literature on the management and implementation of

digital technologies in the learning and teaching process and contribute to the debate on the nature and values of digital technologies in education and other aspects of social, economic political life.

3. Why have I been invited to participate?

You have been selected to participate in this investigation because you are teaching Economics. The recruitment and selection of the participants for this interview will be assisted by the principal of your school, who will have provided this information sheet and the Consent Form. Should you be willing to participate, I ask that you email me at s.sharma@bdsc.school.nz.

4. What will I be asked to do?

Participation in my research would involve you being interviewed by me with a set of prepared questions. This interview is intended not to last more than one hour and would be audio-recorded and later transcribed into a word document. The interview would be held at a time and place convenient to you. I'll offer you the opportunity of checking transcript for accuracy.

Your decision to participate is completely voluntary. You do not have to take part in this study and there will be no penalty to you if you decide not to take part. By completing and signing the consent form it is implied that you consent to take part in the study. You may however decide to withdraw from the study at any time up until the end of data collection and again there will be no penalty.

5. Are there any possible benefits from participation in this study?

The study will give you an opportunity to reflect upon, examine and discuss your own practice in regards to setting up an economics digital classroom. The findings from this study will offer teachers, researchers and students some further insight into the benefits and issues in creating a economics digital classroom.

6. Are there any possible risks from participation in this study?

Your participation in the study will not interfere with the usual activities of teaching and learning with your class. Data collection will occur at mutually agreed times and not around revision and examination periods.

Although this is not anticipated there is a chance that you may feel anxious during an interview. During the interviews you can decline to answer any or all questions or ask that the interview cease at any time without any explanation or consequence.

You will be able to view and amend interview transcripts and ask that any unprocessed part of the data or all unprocessed data that you have contributed be withdrawn from the study at any point during the project up until the end of data collection.

7. What if I change my mind during or after the study?

If you decide to decline your participation at any time, you may do so without providing an explanation. You will be able to view and amend your own interview transcripts and ask that any unprocessed part of the data or all unprocessed data that you have contributed be withdrawn from the study at any point during the project, up until the end of data collection.

8. What will happen to the information when this study is over?

Hard copies of interview and focus group transcripts and audio will be kept in a locked cupboard for six years at the office of the supervisor, Dr Leon Benade, in the AUT School of Education, AR213. All notes and raw data will be destroyed six years after the thesis is finalised.

Computer files will be password protected and stored on a USB, kept in a separate locked cupboard at the office of the supervisor, Dr Leon Benade, in the AUT School of Education, AR213. After 6 years, all transcripts and notes will be shredded and computer files deleted. All information collected by the researchers will be treated confidentially. We will remind all participants of the importance of confidentiality but cannot guarantee that other participants will maintain confidentiality.

9. How will the results of the study be published?

After the completion of the thesis an electronic version will be made available.

10. What if I have questions or concerns about this study?

If you have any questions or concerns regarding the conduct of the research, please notify the Executive Secretary of AUTEK, Kate O'Connor, ethics@aut.ac.nz , 921 9999 ext, 6038.

The researcher and supervisor may also be contacted:

Researcher Contact Details:

I look forward to the opportunity to work with you. If you have any questions please do not hesitate to contact me. My contact details are: Email, s.sharma@bdsc.school.nz or Phone: 2732310, mobile 0277120240.

Project Supervisor Contact Details:

If you have concerns that you would prefer to discuss with someone other than myself, please contact Dr Leon Benade. Email: lbenade@aut.ac.nz or Phone: 9219999 ext, 7931.

**Approved by the Auckland University of Technology Ethics Committee on
type the date final ethics approval was granted, AUTEK Reference number
type the reference number.**

Participant Information Sheet



Date Information Sheet Produced:

16/07/2014

Project Title:

Creating the Economics digital classroom in a New Zealand secondary school - a case study

Dear Student

1. Invitation

My name is Shraddha Sharma, and you are invited to participate in a study that looks at how digital technologies (computers, iPads, BYOD, Smart Phones) help improve your learning of Economics at school. I would like you to be part of a focus group interview (this is when about six of us sit in a group to discuss my questions). I want to know your opinions about what works well, and what works less well for you in Economics since digital technologies have been introduced. I am doing this as part of an MPhil at AUT for under the supervision of Dr Leon Benade.

I will be conducting this focus group at a time to suit us all by the end of term 1 in 2015. Your participation in this research is voluntary (you are not being forced to be part of the group) and I promise not to use your school's name or your name in any report of the results. You must promise not to tell other people outside the group of who was in the group or what we say to each other. If you participate in the group, you will not have to participate in any follow-up unless you wish to. You may withdraw at any time, up until I have completed the focus group discussion (about 1 hour). Nothing will happen if you withdraw. The school and your teachers will not know if you are in the group, or if you have withdrawn.

2. What is the purpose of this study?

I want to find out why it is necessary for you as a student to have a digital Economics classroom. I also want to know what kinds of issues having digital technologies in your Economics class has created for you. I am also finding out about the role of the school and

teachers in all of this. Your answers will help teachers and university people to understand better what works for students when we set up a digital classroom.

3. Why have I been invited to participate?

You have been asked to participate because you are studying Economics. Because the principal and your Economics teacher have already agreed to participate in the study, I was able to advertise to the students to invite them also to participate. Your participation will not interfere with your school commitments. If you do not participate, nothing will happen. There is also an information letter for your parents, and a consent form, which they must sign. There is also a form you must sign, called an Assent Form. I would like you to return those to me when I arrange to visit your class a second time.

4. What will I be asked to do?

If you agree to be part of the focus group, I will ask questions and will be recording your answers on a digital recorder. I will ask you to talk about your experience of using digital technology in your Economics classes. The focus groups interview should take no longer than 1 hour and will take place at school at a time we will work out beforehand. I may have to ask you to give up a lunch-time or study period. Before I begin the group, I will again check I have your permission to record your answers to my questions. Sometime after the focus group, I will send you a paper copy of what we discussed. You will be asked to respect the confidentiality of all other participants and not to talk to others about what we discussed during the focus group.

5. Are there any possible benefits from participation in this study?

In the focus group, you will get to think about how digital technologies influence your learning in Economics. You will also get to think about the ways that your teachers use digital technologies and whether these assist you with your learning. Economics teachers in this school and in other schools may benefit from what I find out.

6. Are there any possible risks from participation in this study?

Although this is not anticipated there is a chance that you may feel anxious during an interview. During the interviews you can decline to answer any or all questions or ask that the interview cease at any time without any explanation or consequence.

7. What if I change my mind during or after the study?

If you decide to withdraw your participation at any time, you may do so without providing an explanation. You can leave the group and withdraw from the study, right up till the end of the focus group, and anything you have said will be ignored.

8. What will happen to the information when this study is over?

Hard copies of interview and focus group transcripts and audio will be stored in a locked cabinet in the office of my AUT University supervisor. Your name and other identifying information will be removed from these documents. Computer files will be password protected and stored on a USB, also held by my supervisor, in a different locked cabinet. After 6 years, all transcripts and notes will be shredded and computer files deleted.

9. How will the results of the study be published?

After the completion of data collection in 2015, I begin writing a long report, called a thesis, which is what I am examined on. When it is completed, it will be provided in electronic form, so will be available to students and their parents. Your name and your school's name will not be used in anything I write about the study.

10. What if I have any questions or concerns about this study?

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEK, Kate O'Connor, ethics@aut.ac.nz 921 9999 ext, 6038.

You may also contact one of the following:

Researcher Contact Details:

I look forward to the opportunity to work with you. If you have any questions please do not hesitate to contact me. My contact details are: Email, s.sharma@bdsc.school.nz or Phone: 2732310, mobile 0277120240.

Project Supervisor Contact Details:

If you have concerns that you would prefer to discuss with someone other than myself, please contact Dr Leon Benade. Email: lbenade@aut.ac.nz or Phone: 9219999 ext, 7931.

Approved by the Auckland University of Technology Ethics Committee on *type the date final ethics approval was granted*, AUTEK Reference number *type the reference number*.

APPENDIX 4 PARTICIPANT INFORMATION SHEET

Participant Information Sheet



Date Information Sheet Produced:

06/11/2014

Project Title:

Creating the Economics digital classroom in a New Zealand secondary school - a case study

Dear Principal,

An Invitation

My name is Shraddha Nand Sharma and I am an MPhil student at AUT. As a head of Economics in a secondary school in New Zealand and as part of my ongoing professional development I am investigating how digital technologies help improve student learning in Economics in a New Zealand secondary school. I also wish to critically examine the issues for teachers, students and leaders that arise when creating the Economics digital classroom in a New Zealand secondary school.

This request is for you to participate in an interview to be conducted by me at your convenience between now and end of term 1 in 2015. I would like you to provide information based on your expertise in the field of digital technologies. I am asking for your help in order to determine the current state of pedagogical approaches to and the use of digital technology in the teaching of Economics. Your participation in this research is voluntary and confidential. You may be assured that neither your school nor your name will be identified in any report of the results of the study. Participation in this phase does not obligate you to participate in any follow up however should you decide to participate in any follow- up, your participation remains voluntary and you may withdraw at any time.

What is the purpose of this research?

The objectives of the study are to investigate why the Economics digital classroom is necessary, analyse what issues digital technologies in Economics create for teachers, students and leaders, and to examine the critical role of school leadership in creating the Economics digital classroom. It also expects to provide practitioners and policy makers with relevant information and insights that will contribute to solving the issues in creating the Economics digital classrooms in secondary schools in New Zealand. The study hopes to contribute to the international literature on the management and implementation of digital technologies in the learning and teaching process and contribute to the debate on the nature and values of digital technologies in education and other aspects of social, economic political life.

How was I identified and why am I being invited to participate in this research?

The selection of participants for interviewing will be based on the role of the person in the school. As you are the Principal, I would like to ask you questions about the relationship between your strategic planning and the implementation of digital technologies and pedagogies, including the question of teacher professional development. More specifically, I would like to hear your views on the issues in creating the Economics digital classroom in New Zealand secondary schools.

What will happen in this research?

Participation in my research would involve you being interviewed by me with a set of prepared questions. This interview is intended not to last more than one hour and would be audio-recorded and later transcribed into a word document. The interview would be held at a time and place convenient to you. I'll offer you the opportunity of checking transcript for accuracy.

Your decision to participate is completely voluntary. You do not have to take part in this study and there will be no penalty to you if you decide not to take part. By completing and signing the consent form it is implied that you consent to take part in the study. You may however decide to withdraw from the study at any time up until the end of data collection and again there will be no penalty.

What are the discomforts and risks?

There are no known discomforts and risks.

How will these discomforts and risks be alleviated?

If you feel uncomfortable talking with me and you are free to withdraw at any stage, and your interview notes will be destroyed.

What are the benefits?

In the present context of knowledge explosion and advancement in digital technologies, the results of my research will provide students and teachers, leaders and other members of the stakeholder community the opportunity to construct their own realities with particular reference to the subject under study. The study also expects to provide practitioners and policy makers with relevant information and insights that will contribute to solving the issues in creating the Economics digital classrooms in secondary schools in New Zealand. The study hopes to contribute to the international literature on the management and implementation of digital technologies in the learning and teaching process. This study will enable me to complete the requirements to gain an MPhil degree.

How will my privacy be protected?

Your identity and the school in which you teach will remain anonymous. Identifying features will be changed in the thesis and journal articles. You will be asked to keep your schools', leaders' and students' participation in this research confidential. All data will be saved in a locked cupboard for six years at the office of the supervisor, Dr Leon Benade, in the AUT School of Education, AR213. Your consent form will also be stored for six years the office of the supervisor, Dr Leon Benade, in the AUT School of Education, AR213. All notes and raw data will be destroyed six years after the thesis is finalised.

What are the costs of participating in this research?

No costs are expected apart from the 60 minutes for the interview.

What opportunity do I have to consider this invitation?

I would like you to email me at s.sharma@bdsc.school.nz within a week to tell me whether or not you are happy to be involved.

How do I agree to participate in this research?

By completing and signing the consent form which is included with this information form it is implied that you consent to take part in the study. Your decision to participate is completely voluntary. You do not have to take part in this study and there will be no penalty to you if you decide not to take part. You may however decide to withdraw from the study at any time and again there will be no penalty.

Will I receive feedback on the results of this research?

Yes, your transcription will be returned so you can make any changes you wish to, and then later on request I will provide you with a summary of the study.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Leon Benade, lbenade@aut.ac.nz , 9219999 ext, 7931.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEK, Kate O'Connor, ethics@aut.ac.nz , 921 9999 ext, 6038.

Whom do I contact for further information about this research?

Researcher Contact Details:

I look forward to the opportunity to work with you. If you have any questions please do not hesitate to contact me. My contact details are: Email, s.sharma@bdsc.school.nz or Phone: 2732310, mobile 0277120240.

Project Supervisor Contact Details:

If you have concerns that you would prefer to discuss with someone other than myself, please contact Dr Leon Benade. Email: lbenade@aut.ac.nz or Phone: 9219999 ext, 7931.

Approved by the Auckland University of Technology Ethics Committee on *type the date final ethics approval was granted*, AUTEK Reference number *type the reference number*.

Participant Information Sheet



Date Information Sheet Produced:

16/07/2014

Project Title:

Creating the Economics digital classroom in a New Zealand secondary school - a case study

Dear Parent/Guardian

1. Invitation

I am Shraddha Sharma, completing an MPhil at AUT under the supervision of Dr Leon Benade. Your child is invited to participate in my study that explores how digital technologies help improve student learning in Economics in a New Zealand secondary school. I wish to examine the issues for students in creating the Economics digital classroom in a New Zealand secondary school.

I request your consent for your child to participate in a focus group interview to be conducted by me at a time and date convenient to the school. Your child's participation in this research is voluntary and confidential. Neither the name of the school nor your child's name will be identified in any report of the results of the study. Participation in this phase does not obligate your child to participate in any follow up, however, should your child participate in any follow-up, this participation remains voluntary and your child may withdraw at any time.

2. What is the purpose of this study?

The objectives of the study are to investigate why the Economics digital classroom is necessary, what issues digital technologies in Economics create for students, and to examine the critical role of school leadership in creating the Economics digital classroom. Your child's perspective will provide valuable insight into teachers', researchers' and other students' understanding of what are the most powerful ways of setting up a digital classroom that can transform economics content.

3. Why has your child been invited to participate?

Your child has been selected to participate in this investigation because he/she is studying Economics, either at a junior level (Year 9 and 10), or at a senior level (Years 11–13). Your child's participation or non-participation will in no way interfere with his/her school commitments. The recruitment of the participants for this focus group interview has been by way of advertisement encouraging volunteers to come forward, and has taken place with the knowledge of the principal and the Economics staff.

4. What will your child be asked to do?

To help us to better understand the way that setting up of an economics digital classroom affects students' learning, focus group participants will talk about what has worked well and what has worked less well for them in terms of participating in an economics digital classroom. The focus group interview will consist of no more than 10 students, and will be audio-recorded. The focus group interview will take no longer than 60 minutes and will take place at a mutually suitable time at school. This may involve part of your child's lunch-time or be part of a study period. During the focus group, your child will be invited to respond to questions in relation to his/her own responses. The researcher will ask for your child's permission to share his/her responses before referring to these in the focus groups. Focus group members will also be reminded that the identities of other members of the group, and the discussion, is confidential.

5. Are there any possible benefits from participation in this study?

Participation in this study will give your child the opportunity to reflect on his/her learning of the content that he/she is studying in economics with the help of digital technologies and to identify aspects of teaching practice involving the use of digital technologies that particularly assist him/her with his/her learning. The economics teachers in the school and in other schools may benefit from the findings of this study in terms of identifying the kinds of teaching practices that are most influential in assisting students in their learning of economics content.

6. Are there any possible risks from participation in this study?

Your child's individual identity will not be disclosed at any time, and no teachers will be present at the focus group. No risks are anticipated. During the focus group, your child can decline to answer any or all questions or ask to leave the focus group at any time without any explanation or consequence.

7. What if I change my mind during or after the study?

If you decide to withdraw your child's participation, you may do so at any time up until the end of data collection, and without providing an explanation.

8. What will happen to the information when this study is over?

Your child will be offered the option of reading the focus group transcripts, once these have been prepared. Audio files will be stored in password protected digital audio files kept by the researcher, and later stored in a secure cabinet in the office of the supervisor, Dr Leon Benade, AUT School of Education, AR213 at the School of Education of AUT University. After six years all data will be deleted.

The Consent and Assent (for under 16s) forms will be stored in a locked filing cabinet in the office of the supervisor, Dr Leon Benade, AUT School of Education, AR213. This storage will be separated from the location of electronic data.

9. How will the results of the study be published?

After the completion of data collection in 2015, the researcher will provide a summary report of the data for participating teachers and students. Participating schools will be provided with the thesis in electronic form by the end of the 2015 school year. Your child, his/her teacher and your child's school will be anonymous in all publication of results. Pseudonyms will be used when referring to quotes from interview transcripts.

10. What if I have questions about this study?

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTECS, Kate O'Connor, ethics@aut.ac.nz 921 9999 ext, 6038.

If you have any questions relating to this study, please feel free to contact one of the following:

Researcher Contact Details:

I look forward to the opportunity to work with you. If you have any questions please do not hesitate to contact me. My contact details are: Email, s.sharma@bdsc.school.nz or Phone: 2732310, mobile 0277120240.

Project Supervisor Contact Details:

If you have concerns that you would prefer to discuss with someone other than myself, please contact Dr Leon Benade. Email: lbenade@aut.ac.nz or Phone: 9219999 ext, 7931.

Approved by the Auckland University of Technology Ethics Committee on *type the date final ethics approval was granted*, ATEC Reference number *type the reference number*.

APPENDIX 5 STUDENT ASSENT FORM

Student Assent Form



Project title: Creating the Economics digital classroom in a New Zealand secondary school - a case study.

Project Supervisor: Dr Leon Benade

Researcher: Shraddha Sharma

- ☐ I have read and understood the sheet telling me what will happen in this study and why it is important.
- ☐ I have been able to ask questions and to have them answered.
- ☐ I understand that notes will be taken during the Focus Group which will also be audio-taped and transcribed.
- ☐ I understand that while the information is being collected, I can stop being part of this study whenever I want up until the end of data collection, and that it is perfectly ok for me to do this.
- ☐ If I stop being part of the study, I understand that all information about me, including the recordings or any part of them that include me, will be destroyed.
- ☐ I agree to take part in this research.
- ☐ I agree to keep the identity and conversations of others in the group confidential.

Participant's signature:

.....

Participant's name:

Participant Contact Details (if appropriate):

.....

.....

.....

Date:

Approved by the Auckland University of Technology Ethics Committee on *type the date on which the final approval was granted* AUTEK Reference number *type the AUTEK reference number*

Note: The Participant should retain a copy of this form.

APPENDIX 6 PARENTS CONSENT FORM

Parent/Guardian Consent Form



Project title: Creating the Economics digital classroom in a New Zealand secondary school - a case study

Project Supervisor: Dr Leon Benade

Researcher: Shraddha Sharma

- ☐ I have read and understood the information provided about this research project in the Information Sheet dated 16/07/2014.
- ☐ I have had an opportunity to ask questions and to have them answered.
- ☐ I understand that notes will be taken during the Focus Group that my child will participate in, and that the discussion will also be audio-taped and transcribed.
- ☐ I understand that I may withdraw my child/children and/or myself or any information that we have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
- ☐ If my child/children and/or I withdraw, I understand that all relevant information including tapes and transcripts, or parts thereof, will be destroyed.
- ☐ I agree to my child/children taking part in this research.
- ☐ I wish to receive a copy of the report from the research (please tick one): Yes ☐ No ☐

Child/Children's name/s :

.....

Parent/Guardian's signature:

Parent/Guardian's name:

Parent/Guardian's Contact Details (if appropriate):

..... Date.....

Approved by the Auckland University of Technology Ethics Committee on *type the date on which the final approval was granted* AUTEK Reference number *type the AUTEK reference number*

Note: The Participant should retain a copy of this form.

APPENDIX 7 FOCUS GROUP FLYER

Free Gifts for joining Focus Group Study

Join us to answer some
questions about

Creating the Economics
digital classroom in a
New Zealand secondary
school

Get a free gift for participating! There will be snacks and drinks too!

Your opinions & experiences matter!

We are looking for Economics students to participate in a 60 minutes *focus group* discussion on the above topic. A focus group is a discussion with 7 to 10 people about their views and experiences of a topic.

When: Thursday, 15th September, 2014
10.00 am – 11.00 am

Where: At your school – Room to be confirmed

To register for the Focus Group: Please contact Shraddha Sharma 0277120240, email s.sharma@bdsc.school.nz or see your Economics teacher for more details.

Questions? Please contact Shraddha Sharma 0277120240, email s.sharma@bdsc.school.nz