THE CHANGING ROLE OF TEACHERS AND STUDENTS IN AN ICT ENGLISH UNIT

Is ICT the 'Harry Potter's Wand' for engaging student learning and developing pedagogy in English?

Stephen Shaw

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Signed Statement of originality

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the dissertation itself.

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Abstract

Responding to the escalation of technological educational tools and the expectation of technology delivering educational miracles, this research addresses the need to understand more about the ways in which technology impacts classroom practice, roles and relationships. It analyses the perceived roles of students and teachers in responding to an ICT integrated poetry unit, responds to the Australian Curriculum imperative for subject English to increase the integration of ICTs, and examines the perceived pedagogical and learning effect on teachers and students regarding integrating ICTs into subject English. The research investigates the perceived professional skills, attitudes and abilities of teachers as they balanced the dual concepts of the facilitation and control of student learning as well as the pedagogical encounters students experience in the world of technology and learning.

The research question was: ‘How might the roles and relationships of teachers and students change when using ICTs in a middle school English curriculum, specifically, a Year 9 poetry unit?’ The research setting for the project was a regional, private boys’ secondary school as they engaged with an integrated computer technology poetry unit online delivered. The school was transitioning to a one-to-one laptop program and agreed to the program as a pilot project to inform the transition in regard to student and teacher perceptions to technology integration. The school had not previously engaged in an online delivered unit of work or implemented integrated technology across a year level cohort of English students.

Case study methodology was utilised as an embedded multisite with a mixed methods approach to investigate a contemporary phenomenon in a real-life context over 14 weeks with four Year 9 English classes and their four teachers. Data collection through
the student surveys provided Likert scale responses to TPCK designed open-ended questions as well as qualitative student comments. Teacher data was collected through surveys paralleling the student TPCK designed questions using qualitative comments. The emergent themes were then compared to data collected from a focus group teacher interview at the conclusion of the project. The student survey data was firstly analysed using descriptive statistical quantitative analysis. Content thematic qualitative analysis based on grounded theory and aided by the Leximancer software program was subsequently used to analyse the student and teacher comments as well as the teacher focus group interview. Models of technology integration were also reviewed and applied to the research data including Mishra & Koehler’s TPCK model (2008), Prestridge’s Professional Development Model (2007), Green’s 3D model (1998) and Starkey’s digital age learning matrix (2011), to provide a more detailed analysis of data consistent with Ertmer et al.’s (2011) progression from teacher-centred to student-centred pedagogy, and Donnelly et al.’s (2011) teacher ICT Integration model.

The findings of this research project show that integration of technology fulfils many of the anticipated promises for student engagement but it comes with dynamic changes to the roles of both teacher and student. Teachers and students in this research project both report perceived agreement that technology changed their roles in the classroom. For students, the perceived change of role meant fun, achievement, and control of their learning, learning from their friends, sharing their knowledge with their teacher, creating new knowledge, becoming independent learners, being transformational, and moving from being passive learners to active learners. For teachers, the perceived role change meant engaging in reflective teaching practices, developing computer skill competency, being collaborators and facilitators of learning, technology enablers and explorers of new pedagogies, and an acceptance of being the ‘guide on the side’ rather
than ‘the sage on the stage.’ The research is significant as it has not only provided an authentic teacher voice in a technologically transitionary school environment but it has also given a student voice to the topic of student learning when integrating ICTs. It has also emphasised the perceived reciprocal nature of pedagogy and learning and highlighted learner knowledge as an important core knowledge base.

As a result of the study, the following implications were elucidated:

- **For Schools**: to provide, sustain, and review technology programs for effective pedagogy integration, current cultural adolescent technology trends, formal and informal teacher professional technology development using TeachMeets and collegiate workshop approaches;

- **For teachers**: to take responsibility for improving technology skills through a ‘Flipped Professional Development’ model allowing ‘just for me’ individual inquiry and collaborative online and face-to-face experiences;

- **For Students**: to be involved in cross curricular ‘in situ’ technology skill development particularly in Year 7, to participate in consultations for unit planning for technology integration, development of the ‘craftsman’ learner in the classroom;

- **For Curriculum Practice**: scope and sequence planning for co-curricular development of multiliteracies in middle school.
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Chapter 1

Introduction to Dissertation

1.1 Introduction of the Topic: The background

The escalation of technological usage in educational contexts since the introduction of Information and Communication Technologies (ICTs) as a cross curriculum priority in National Curriculums worldwide (Eadie, 2001) has led to a proliferation of response. These have ranged from technology being viewed as the ‘Harry Potter’s wand’ of educational miracles (Swan, Hooft, Kratcoski, & Unger, 2005; Wellings & Levine, 2013) in the jaded Hogwarts of worldwide educational institutions to the Voldemortian antithesis of educational progress embodying the abolition of traditional pedagogy and learning (Ally, 2013; Pegrum, Oakley, Faulkner, 2013; UNESCO, 2013).

In Australia, the debate continues as to whether technology has changed the landscape of the Australian classroom. Has the wand of technology proven to be the elixir of engagement prophesied by Dumbledorian theorists (Prensky, 2012; Turner, 2011) ushering in a new millennium (Kerin, 2008) with its vision of self-directed constructivist learners? Does mastery of the wand determine the effectiveness of the educational outcomes or is it King’s (1993) ‘sage on the stage’ (p.23) pedagogical approach of Severus Snape or rather, the ‘guide on the side’ (p.23) strategies of Dumbledore? Perhaps it is the transformational magic of the digital culture in which our latter day adolescent educational magicians (the Hermione Grangers, Ronald Weasleys etc) are immersed, that is the key mitigating factor for engagement and more effective educational outcomes (Winn, Erwin, & Becker. 2013)?

Winn, Erwin, & Becker (2013) argue that the brains of digital learners are physically different from those of learners who have not experienced ongoing exposure to
technology, and that they are equipped with hyper-connected and multi-tasking
digital abilities. Others argue that young people’s engagement with technology and
the online world has significantly altered their dispositions or orientations toward
learning, in what has been described by Lankshear & Knoble (2006), citing Merchant
(2009), as ‘a developing trend or attitude’ (p.108) that make use of diverse literary
fluencies. These literary fluencies demand that students creatively assemble and
reassemble knowledge within a new literacies framework, for example, using web
quests, virtual field trips as well as integrating a variety of media by copying, pasting,
exporting and importing various digital media into their own work. Following this
line of argument, contemporary educators in our digital educational climate need to
continually make strategic decisions regarding integrating computer technology to
prepare students with the diverse literacy fluencies being demanded, thus giving new
precedence to the pedagogy of digital literacies (Labbo, Place, & Soares, 2010). Winn,
Erwin, & Becker (2013) postulate that the slow pace of conventional instructional
practices developed more than a century ago does not gel with contemporary learners
who opt for a new paradigm, less Victorian and more new millennium (Kerin, 2008;
learning effectiveness and increased access and convenience in this new digital
paradigm are supported by Poon (2013) and the use of ICT blended learning has also
demonstrated increased attainment in terms of student results when compared to
conventional classroom pedagogies (Bedell & Kay, 2010).

Others have argued that integrating technology in the classroom promotes inclusion,
aligns students’ technological skills with academic and vocational success, facilitates
differentiation and advocates learning outside school hours while also endorsing life-
long learning (Swan, Hooft, Kratcoski, & Unger, 2005; Wellings & Levine, 2013).
Furthermore, it is argued that the use of technology within learning environments
provides engagement for learners, enhancement of learning, ease of use, and learner empowerment (Roffe, 2002). While Stacey & Gerbic (2008) sum up the benefits of ICT blended learning as ‘...provid(ing) flexibility in learning for both students and teacher where the integration of the virtual and physical landscapes enables both teachers and students to become learners’ (p.965), the challenges of blending the physical and virtual environments are not to be overestimated by technology integrators. However, the challenges can be mitigated by the learning relationship between teacher and student as a key factor in a successful blended learning experience. Stacey & Gerbic (2008) emphasise the need to consider students’ learning maturity when implementing blended learning due to its demands for student autonomy. The recommended teachers’ role is a facilitatory one involving face-to-face sessions as well as feedback within the online e-learning environment and the integration of learning activities based on the strengths of different media. It is this learning relationship between student and teacher that is undergoing change (Merchant, 2009) as their roles become less traditional and more transformational.

With the introduction of ICTs as a cross-curriculum priority in the Australian National Curriculum as well as increased student access to school computers, schools have been adopting ICTs as a necessary part of their program. The changing culture from traditional literacies to digital literacies has also been highlighted in the vocational trends of contemporary society (Kist, 2012; Labbo et al., 2010). This in turn has emphasised the need for in-depth research into the programs offered by high schools to their digital learners whose mindset is physically and operationally different to those who have not been experienced on-going exposure to technology (Winn, Erwin, & Becker, 2013).

Significant research is available on the benefits of blended learning (Roffe, 2002; Stacey & Gerbic, 2008), the nature of practical obstacles to integrating computer
technology (Alley, 2013; Pegrum, 2013; UNESCO, 2013), and the practical and pedagogical considerations of computer technology integration (Brant et al., 2013; Lui, 2013). This research also focuses on the changing roles in the teaching/learning relationship between teacher and student when technology is integrated. The emerging digital paradigm of the twenty-first century espouses an accelerating technological integration based on quantum computing (Kurweils, 2005) where increasingly efficient access and technology tools are available to teachers and students. Particularly in relation to KLA (Key Learning Area) English in the middle school, the questions of student competency, teacher capability, adapting pedagogy and student centred learning in the new millennium (Kerin, 2008; Moyle 2012; Turner, 2011) impact upon the nature and understanding the role teachers and students adopt. Middle school in the Australian context refers to the practices that make formal education responsive and appropriate to the needs of young adolescents (ages 10 – 14 and incorporating various combinations of Years 5 – 9) based on a constructivist approach to curriculum and pedagogy. School structure is organised to allow teaming of students and teachers with flexibility in use of time, space and resources. The focus is on student engagement and achievement rather than structures (Barratt, 1998; Newhouse, 2000; Powell & Allen, 2001). This study examines these issues through in-depth case study research investigating the how and the why teacher and student roles may be changing in a contemporary middle school classroom setting (Given, 2008).

However, fears of overstimulation, distraction, inappropriate technological usage and loss of traditional learning skills are indicative of the inhibitions expressed by some teachers. These inhibitions are sometimes argued to explain teachers’ lack of willingness to adopt and integrate computer technologies and impact upon teachers’
acceptance of a different relationship paradigm with students (Ally, 2013; Pegrum et al., 2013; UNESCO, 2013). While Mehta’s (2012) observations on the practical impedimental aspects of technology in relation to screen size, battery life, and limited memory are echoed by Lui, Wu, & Chen (2013) and Brant et al. (2013), these researchers also argue that the challenges to teachers in ICT integration may more likely be ones of individualising the content to student needs, intervening in the learning process and supervising students undertaking tasks. This reflects the perennial echo of traditional teacher directed pedagogy rather than addressing the greater challenge of any necessity for role or relationship changes.

1.2 The Context

This research was conducted within an all-boys Year 5-12 private Catholic College in regional Queensland. The school is 117 years old with approximately 860 students and is considered to be in the average range for socio-economic status. In addition, it provides for marginalised boys from various backgrounds; however, a majority of families considered middle class with both parents working. The school has a growing reputation of academic and sporting achievement and is recognized as a leader in boys’ education and IT implementation in the region. As well as setting high standards across all areas of school life, the college was experiencing strong enrolments in all grades. The research focused on the middle years of schooling, specifically the 2010 Year 9 cohort of students and their teachers in the middle years of schooling in 2010. As the then Head of Department English, I developed and wrote the online ICT poetry unit in association with the Head of IT. As a teacher of Year 9 English, I was also a participant in the research. The paradigm of being in a position of power as both a participant and researcher is detailed in section 3.6.1 of this study.
In my previous roles as Coordinator of Integrated Curriculum for Years 8 and 9 and as Head of English, I had been working in cooperation with the school’s Head of Technology to implement an IT policy for the introduction of a 1-to-1 laptop and iPad program. The school was transitioning to a one-to-one laptop program and agreed to the program as a pilot project to inform the transition in regard to student and teacher perceptions to technology integration. The school had not previously engaged in an online delivered unit of work or implemented integrated technology across a year level cohort of English students. As I had been involved in assisting with the strategic development of e-learning within the school to prepare students for the digital world of learning, the pilot program provided a step into high school technology immersion. In my role, I dealt with the counter side of this implementation, the professional skills, attitudes and abilities of teachers as they balanced the dual concepts of facilitation and control of student learning as well as the pedagogical encounters students experience in the world of technology and learning. In this context, I observed both the positive and negative effects of teachers and students integrating technology in classroom activities.

In terms of the application of ICT into middle school curriculum, and as an educator of 20 years’ experience who has observed and transversed the digital divide, my observation is that adolescent boys’ response to the use of technology in the classroom has primarily been one of engagement with learning. As well, the tasks that come with that learning, although being difficult at times for students, have been ultimately beneficial. The emergent roles and relationships that technology induces would seem to have the effect of enabling the lifelong learning strategies inherent in the Harry Potters, Ronald Weasleys and Hermione Grangers of our classrooms. The purpose of this research was to learn more about the ways in which the use of technology impacts
teaching, to enable teachers to gain a deeper understanding of their role and the student’s role when integrating computer technologies into Key Learning Area (KLA) English and to make recommendations to middle schools in assisting both teachers and students with the challenges associated with ICTs.

1.3 The Research Question

The research question arose from my attendance at an IT Share Queensland Conference in 2001/2002 where the concept of the virtual classroom as well as online delivery of courses was being explored in various workshops. An obvious omission in these workshops was KLA English and subsequent inquiry revealed the need for Australian case studies in this area. Combined with my school's initial decision to explore the integration of technology in the curriculum, the need to work with staff and students in this developing area provided the impetus for this research.

Current media reports, which often emphasise the social impact of technology on young adolescents, combined with a relative level of ignorance from many adults including teachers and parents in terms of the educational use of ICTs, have generated hesitation in some teachers and parents regarding their use, hesitation not reflected in the digital generation (Prensky, 2001). However, responding to criticisms of ICT as one dimensional pedagogy and that ICT ignores essential elements of the nature of learning and good pedagogy, Bax (2011) and Prensky (2012) suggest the balance between the operational knowledge of technological usage and curriculum content knowledge can be achieved through a partnering relationship between teachers/parents and students where teachers know what has to be taught and what to do with technology in their pedagogy and students are able to direct their learning through increased technology usage. The current focus of most research into
adolescent digital usage to support in-school learning seems to be social networking, gaming and gamification, internet usage, mobile technologies and open source education particularly in the areas of Math, Science and Humanities (Centeno, 2013; Johnson, Smith, Levine, & Haywood, 2010; Kamenetz, 2013; Riedel, 2014; Scacchi, 2012; White, 2008). Many schools are responding to the National Curriculum’s mandate to integrate computer technology with increased access to computer labs with static desk top computers, one-to-one laptop programs, and the introduction of iPads and Tablets. Whilst I believe this is important, the real question is whether the introduction of these initiatives is enabling teachers’ pedagogy to engage students in learning (Prensky, 2012). I am interested in investigating how teachers and young adolescents in middle school English perceive their competency in using and implementing technology in learning and if these perceptions have changed the relationship and role of teacher and student in the classroom. Are our programs and classroom practices integrating ICTs effectually? An aspirational goal of this research is to generate recommendations for schools in terms of classroom practice as well as curriculum development.

This research inquiry has been distilled from the research question: ‘How might the role and relationship of teachers and students change when using ICTs in an online delivered middle school English curriculum, specifically, a Year 9 poetry unit?’ In particular, the project investigates the relationship between teachers and students and their observations of their roles as they engage with an integrated computer technology online delivered poetry unit for Year 9 students in a regional Catholic Year 5 -12 boys’ secondary school. The research question was refined from focus questions which included:

- What is a technology integrated middle school English curriculum?
How does it work for KLA English?

What technology works best in such a course?

Does integrating computer technology affect adolescent middle school student engagement in KLA English?

What do students report as being enjoyable when integrating technology into the English curriculum?

How does integrating technology affect students’ perceived attitude to the English curriculum?

To what extent can teachers and students participate productively in an integrated computer technology online delivered English course?

Do teachers and students perceive that they have the requisite technological skills and knowledge to participate productively in an online delivered course?

In what ways does integrating computer technology into a middle school English curriculum change roles and relationships in the classroom as perceived by students and teachers?

What do student/teachers perceive as valuable in an integrated English technology unit?

What do students/teachers perceive as effective learning/teaching in an integrated technology English course?

The research question guided the overall research design with the sub-questions providing specific areas of focus.

This research is important because in a 21st century characterized by Prensky (2012) as evidencing ‘variability, uncertainty, chaos, and ambiguity ... and increasing
change’ (p.2), it analyses how the students and teachers perceive their roles may change when technology is integrated with an English unit of work. In doing so, it addresses how to effectively implement the greater emphasis in the Australian Curriculum requiring subject English to move into multiliteracies and digital literacies. Specifically, the research provides a platform for negotiating computer technology integration for secondary schools transitioning to digital based learning especially in the English curriculum. More broadly, in Australia as across the world, there is a pedagogical and learning need to know the effect on teachers’ and students’ roles and relationships when integrating ICTs into subject English.

In summary, I seek to investigate how teachers and students perceive role and relationship change when using ICTs in KLA English. I seek to determine whether young adolescents report perceived increased engagement in learning and how, through their perceptual understanding, teachers observe their respond to the challenge of integrating computer technology into their pedagogy and practice and what this might mean in terms of recommendations for the Australian English curriculum and classroom.
Chapter 2

Literature Review

2.1 Introduction

The research question arose from a perception that there was a need to validate the blended learning approach as a relevant and productive strategy (Livingstone, 2012), in this instance for boys studying the Australian Middle School English curriculum. The study developed into an investigation into the challenges that face teachers and students in a technologically advancing age. Howell (2012) highlights the need for teachers to develop digital pedagogy that keeps pace with the fast moving and ever changing world of digital technology as well as meeting the societal imperatives of digitally alert parents and employers. Digital pedagogy is an emerging way of thinking about and evolving the distinctive nature of teaching and learning in contemporary times as information and communication technologies (ICTs) permeate both home and classroom. Knowledge and skills around computing and communication devices, the software that operates them, the applications that run them, and the systems that build with them promote a technologically supported culture (Prestridge, 2007) that permeates the home and the classroom. Citing the lassitude of schools in the development of ICTs in core curriculum subjects, Sullivan (2009) has insightfully highlighted the discrepancy between student perceptions of the importance and opportunities of core subjects like English in education. He also observes the lack of corresponding positive engagement by the same students in these subjects and lays the responsibility for necessary technology orientation at the feet of school administrators. Turner (2011) points out that although ICTs are relatively new, there has been the perceived a need for schools to incorporate
multiple modalities into core curricula to facilitate student engagement. Labbo, Place, & Soares (2010) address similar concerns that the development of effective technology integration through teacher interventions and self-regulatory student practices is required to facilitate student literacy. In their view, technology practices should not just be directed to support literacy achievement but also to implement instructional change. However, the literature appears to support a hesitation on the part of schools to integrate technology focusing, firstly, on the IT competency of teachers, highlighted by Kerin (2003), and, secondly, on students to adequately use technology. The debate regarding school hesitation relates to effective digital pedagogy as well as historical issues of motivation and ownership of learning topics as detailed in OECD The New millennium learners and the MCEETYA Four Year Plan 2009–2012. While research examining school hesitation is available from the American context and provides relevancy, White (2008) indicates that the Australian context is a developing area of expertise regarding these topics. In response to the research questions, the literature review will specifically address three areas:

- Middle School Learning and Digital Pedagogy
- English Curriculum and Technology
- Constructing Integration Models

2.2 Middle School Learning and Digital Pedagogy:

2.2.1 Middle School Learning

The formulation of middle school curriculum focuses on the transition from primary to secondary school with graduated strategies, teacher-student relationships and learning skills. Middle school curriculum does not conform to any blueprint but
revolves around a set of principles that shape learning activities to the context of the learner, answering the question of not what middle school students learn but how they learn (Anfara, 2001). Some, like Anfara (2001), would argue that middle school curriculum should consist of questions that students ask about the world around them. Some educational traditionalists would argue that middle school students need to receive knowledge that is enshrined by the boundaries of subject matter content (Eccles & Roeser, 1999; Pellegrini & Bartini, 2000). This curriculum divide between inquiry-based and content–based approaches characterizes the practice of middle school development in the high school years (Years 7, 8 and 9).

Over fifteen years ago, Powell & Allen (2001) dated the beginning of middle school reform in America as being the 1989 Turning Points publication and the report can be summarized into eight categories: creating small learning communities; teaching a core academic program; ensuring success for all students; staffing middle grade schools with teachers expert at teaching young adolescents; improving academic performance fostering health and fitness; empowering teachers/administrators to make decisions about the experiences of middle grade students; re-engaging families in education and; connecting schools with communities.

These recommendations were reinforced by Turning Points 2000 (Jackson et al. (2001), which advocated rigorous academic standards and curriculum relevant to the concerns of adolescents focusing around important universal and disciplinary themes that called for a totally integrated ecology of schooling at the middle level. In the Australian environment, similar concerns were reflected in the South Australian Eyers Report (1992) and the Barratt Report (1998). As well as noting the educational disengagement of early adolescents, both reports recommended what became
foundational middle school principles: learner centred, collaboratively organized, outcome-based, flexibly structured, ethically aware, and community centred curriculum (Barratt, 1998; Eyers, 1992).

This emerging pattern of middle school curriculum was further developed by Powell and Allen (2001) who delineated three general epistemologies that characterize and divide middle school curriculum: subject centered (knowledge-out-of-context), interdisciplinary (connected knowledge) and integrated (knowledge-in-action). The spectrum flows from the direct instructional approach to the connecting interrelations of the various knowledge areas to the situated learning of the integrated curriculum contextualized by a theme or issue from the students’ daily lives. This delineation demonstrates not only the range of middle school curriculum but the ‘drift’ from subject/content centred teaching to interdisciplinary/cooperative teaching of core subjects. This exploration of interrelationships and connections between various areas of knowledge to integrated contextualized learning in turn is centred around themes or situations relevant to student centred learning and responding to adolescent contextual knowledge.

2.2.2. Digital Technology and Student Learning

In the Australian context, Newhouse’s (2000) comprehensive research linked integrated contextualized learning to student-centred learning. Newhouse developed the case for student centred learning and cooperative relationships between students and teachers as well as the issue of student computer competency. Newhouse’s (2000) research into the extent of Middle and Secondary School laptop/computer skill and usage at the turn of the century confirmed high usage in years 7-9 but a 50%
drop-off rate in the senior years due to perceived vocational examination needs. In a further study, surveys of students in Years 8-12 conducted over a five year period in a secondary school in Perth, Western Australia, undertaken firstly by Newhouse (2000) from 1995 to 1999 with a further longitudinal study by Newhouse & Rennie (2001) showed high success rates with computer literacy and investigative skills. This increased skill level occurred particularly when students used computers in English and SOSE (Studies of Society and Environment) with adolescent contextualised knowledge tasks that developed student centred learning.

Increasingly positive outcomes over this period were registered for Year 8 students who typically used a wide range of computer applications for three hours per week at home and two to five hours per week at school, demonstrating increased levels of computer competency.

Nevertheless, twenty years after his initial excursion into computer integration, subsequent research by Newhouse (2013) indicates that the issues of computer literacy, accessibility and affordability and their effects on teacher delivery and student learning are still current within many educational environments even though the early aims of a computer-saturated educational environment have been achieved with positive impacts on student learning. Newhouse’s research into current practice in Australian schools also reveals that obstacles to computer integration are less centred on technical delivery and the organizational of school leadership and policy but can be reduced to teacher-centred pedagogical beliefs and teachers’ personal experience and beliefs. Newhouse highlights the need for teacher change in terms of classrooms dynamics and teacher computer knowledge (Newhouse, 2013).
2.2.3. Modes of Delivery

The debate in the current educational climate also includes questions about the various modes of delivery or instrumentality, what works best, and how to manage these. Modes of delivery or instrumentality include 1-1 laptop, iPad and iPod programs as well as Bring Your Own Device (BYOD) and Bring Your Own Technology (BYOT) alternatives (Newhouse, Lane, Cooper, Twining, 2014) or BYOx where the ‘x’ represents any student/teacher privately owned devices access internal educational networks (State of Queensland, Department of Education Training and Employment, 2013). Newhouse et al. (2014) provided snapshot studies across three schools which emphasised the need for visionary leadership, understanding of the best means of equitable provision and the choice of robust devices to deliver learning outcomes when deciding between 1-1 programs or BYOT. A Queensland DETE Report (State of Queensland, 2013) conducted across five Queensland State High Schools favoured BYOx as a progression to a more flexible and evolved 1-1 program, in order to respond to the expectations of contemporary learners, and addressing shortfalls in current funding. Whatever pathway is chosen, these reports indicate an issue exists regarding student and teacher digital competency as well as the need for transformational learning to occur as early as possible by adapting middle years pedagogy to adolescent digit culture.

2.2.4. Digital Literacy

Green & Beavis (2012), argue ‘for building digital literacies into the literacy and English curriculum and for paying attention to the multimodal, digital texts that are part of contemporary children’s lives’ (p.16) and emphasise the development of the
adolescent digital culture by citing 2007 ABS statistics which provide evidence of an increase in internet usage and interactive internet gaming amongst younger children and adolescents quoting. Updated in 2014, The Australia Bureau of Statistics report into young–mid adolescent computer usage states that from 1998 to 2009, the greatest number of households with computers and internet access were those who had adolescent children and the number of these households had risen from 63% to 88% of the population. Internet usage was reported in 2009 as rising with age with 60% of 5-8 year olds and 96% of 12-14 year olds using the internet, 92% accessing the internet from home, 86% from schools and 45% from other locations (e.g. libraries). As well, 85% of all children used the internet for educational purposes (girls 87%, boys 82%), again increasing with age; 64% for 5-8 year olds, 91% for 9-11 year olds, and 94% for 12-14 year olds (see Figure 2.1). These statistics indicate the relevance of computer usage to the adolescent population, the target group of this research.

Figure 2.2 also indicates that the 12–14 year age group, the age group relevant to this research, spent significant hours in internet usage compared to other age groups. Game playing increased from 51% in 2006 to 60% in 2009 (girls 69%, boys 78%) with social networking sites visited in 2008/9 by 11% of 9–11 year olds and 48% of 12–14 year olds.
(a) Refers to activities children had identified doing in the 12 months prior to April 2009.

(b) IM refers to instant messaging.

(c) AV refers to audio-visual content (TV programs, videos and movies).

Source: ABS Children’s Participation in Cultural and Leisure Activities, Australia, April 2009 (cat. no. 4901.0)

Figure 2.1. Type of Internet Activities done at home by child internet users.

![Chart showing type of internet activities by age group and time spent online.]

(a) For the 12 months prior to April 2009.

Source: ABS 2009 Children’s Participation in Cultural and Leisure Activities Survey

Figure 2.2. Numbers of hours child internet users spend online at home per week.

These statistics not only indicate the emerging digital lifestyle changes of younger adolescents in Australia that are enculturated in the primary school years and carried through to later adolescence and adulthood but also the relevance of technology to young adolescents. This highlights the necessity to develop digital pedagogy that integrates technology into the classroom in order for educationalists to adapt to the changing adolescent cultural climate. These statistics indicating the influence of adolescent digital culture reinforce the need for a pedagogical change for teachers in
their role as classroom facilitators to incorporate these cultural changes in responding to middle school learners.

2.2.5. Digital Pedagogy

In regard to developing digital pedagogy, Newhouse (2000) reports that teachers who employed an instructivist pedagogy registered little computer usage while teachers who aimed to create classroom learning environments promoting student-centered learning tended to regularly facilitate the use of portable computers in their classes. Overall, results showed minimal and limited use of computers in classrooms resulted in their having little or no sustained impact on the learning environment. This is consistent with more recent literature that shows when teachers do not receive technical and/or peer support or embrace student-centered learning strategies, digital pedagogy implementing technological integration is limited (Ertmer & Ottenbreit-Leftwich, 2013).

Furthermore, from the teacher’s perspective, these barriers to technological integration are further detailed by Ertmer (2013) as first and second order barriers. First order barriers are categorized by external influences such as lack of adequate access, time, training and institutional support. The second-order barrier includes teachers’ personal and fundamental beliefs such as teachers' pedagogical beliefs, technology beliefs, and willingness to change (Ertmer 2013). These barriers to technological integration have external and interior connotations that when either or both are present, limit or eliminate the ability to integrate technology into the classroom.
Similarly for students, a middle school study of Queensland rural and remote area students conducted firstly in 2004-2006 and, later, in 2008-2010 by Courtney & Anderson (2010), identified the disconnect between home and school for middle school students where students preferred to work on computers at home rather than at school because of the ways computers were being used in the classroom. Courtney & Anderson (2010) state that ‘seven years later [after the 2004-2006 study] the current larger study [in 2008-2010] does not indicate any improvement in the situation’ (p. 9). The factors Courtney & Anderson (2010) identified as most commonly cited by students as being problems when using computers at school were:

- lack of opportunities for multi-tasking;
- poorly functioning Internet blocking and filtering;
- uninspiring uses of ICT;
- computers and/or Internet connections that are slow or crippled by sharing bandwidth across the network;
- lack of effective maintenance;
- and boring, unrelated tasks irrelevant to life;
- non-responsiveness to adolescent culture (p. 9).

A study by Sullivan et al. (2009) investigated student engagement factors at the middle school level by comparing 333 13 year olds in two Catholic secondary boys’ school and a Government secondary school. The research suggests a solution to the dysfunctional divide (the disjunction between the use of technology at home and at school as opposed to being information-rich or information poor) is to emphasise self-regulating learning behaviours and focus on both teacher interventions with students and student self-regulatory practices. Sullivan et al. (2009) postulate student engagement in terms of sociocultural factors where the student experiences a continuum between curriculum pedagogy and their own culture i.e. their digital culture. Sullivan et al. (2009) advocate emphasising ‘will’ and ‘skill’ (p. 79), by
combining students’ efficacy beliefs about their ability to perform classroom tasks to their beliefs that these tasks are interesting and worth learning. In Turner’s (2011) view, a ‘new capitalism’ (p.614) is formed that links students via computer integration to the global community. This theoretical perspective proposes role changes for teachers and students which ICTs can deliver by closing the dysfunctional divide and connecting the digital generation to curriculum using digital pedagogies. Moyle (2010) also calls for the innovative, creative, collaborative use of technology in challenging students with complex and engaging activities in ‘bridging the divide between formal and informal learning’ (p. 36).

Labbo, Place & Soares (2010) similarly argue for the development of a ‘good fit’ (p.9) between digital pedagogy that integrates technology and middle school classrooms, that might be gained by utilizing students’ technology ‘funds of knowledge’ (p.9) as they transfer and cognitively apply literacy skills in a multidirectional bridge between home and classroom. Using the context of authentic learning opportunities in technological, on-screen environments, Labbo et al. (2010) suggest four key components of learning for effective technology integration for middle school users in response to the need for ‘a highly responsive pedagogy of multiliteracies that allows for language and other modes of meaning to function as representational resources that are constantly remade by users’ (p.10). These are: ‘1) active engagement, 2) participation in groups, 3) frequent interaction and feedback, and 4) connection to real-world experts’ (p.11)). This approach places the learner at the center of the meaning-making process connecting home, classroom and curriculum with the local and global community through technology integration.
2.2.6. Obstacles to Digital technology Integration

This approach to technology integration using digital pedagogy in middle school curriculum provides for the bigger picture of education allowing the implementation of different teaching methods not restricted by the dictates of content-based disciplinary subjects in other sections of secondary education. Kist (2012) details case study exemplars of obstacles faced by teachers wishing to integrate digital literacies:

George Mayo, a middle school teacher in Maryland, says: My theory is that most high schools, with their honors and AP classes, don’t have the room to integrate [new media] into their curriculums. Garth Holman says: [The] departmentalized nature of a high school means that very few cross-curricular activities take place. Administrations also create a kind of ‘mini-college’ atmosphere where standards are all that is important in educating kids. Very few teachers are willing to have fun, try new things. The perception is that high school teachers see themselves as content teachers first (p. 18).

Kist (2012), addressing the problem of integrating technology into an existing high school organisational model, proposes that middle school structure and philosophy provides the opportunity to act outside high school norms to experiment with new ideas using technology as an interdisciplinary connection between core subjects. If \, as Kist (2012) suggests, form follows function, referring to middle school timetabling, subject integration and teacher allocation, this provides ‘the most persuasive reason for new literacies proliferation at the middle school level’ (p. 19). While Kist’s insights reflect the American context and speak to a more departmentalised knowledge system, their relevance to the Australian context should not be underestimated. They
parallel the increasing emphasis on content assimilation across the KLAs in the middle school curriculum in Australia, and highlight the need for integrated digital literacies in a learner-centred educational environment. The relevance of Kist’s research is also reflected in his description of high school teachers as seeing themselves as content teachers first rather than as processors or facilitators of knowledge. Making this shift is a role change that necessitates the implementation of different teaching methods which seems to have been lost by teachers in the transition from primary to high school in the Australian context (Carrington, 2003).

Furthermore, Labbo et al. (2010) also point to the less than robust application of ICTs in classrooms and the importance of transformative digital pedagogies, particularly in the middle school context:

> While computer technologies have revolutionized modern society in general, and business, entertainment, and government, in particular, their overall impact in the classroom has been less robust, so teachers who take the time to thoughtfully integrate computer technologies into the classroom are doing cutting-edge work in the field... It also requires that they find a transformative niche’ ... that allows them to explore new pedagogies involving innovative uses of computer technologies (p. 18).

This lack of a robust approach to integrating mobile technology in the classroom can be partially explained by acknowledging mitigating circumstances. Despite the many advantages and drawcards for integrating mobile technology in the classroom, there are also a few limitations. For a start, while mobile technologies can be motivating and engaging tools for students, there is potential for overuse, resulting in students’
boredom and the desire for faster desktop or laptop technologies (Swan et al., 2005). Furthermore, the effectiveness and successful integration of mobile technologies in classrooms is dependent on a range of issues related to hardware and software availability. This includes network connectivity and sufficient device-to-student ratios, in addition to teacher training and confidence in using technologies in the classroom (Ally, 2013; Flanagan, Bouck, & Richardson, 2013; Pegrum et al., 2013). Additionally, teachers may fear that students may become overstimulated, distracted or may use mobile technologies inappropriately in the classroom, or result in cyber-bullying (Ally, 2013; Pegrum et al., 2013; UNESCO, 2013). These last, in particular, are all clear concerns that could inhibit teachers’ willingness to adopt and integrate mobile technologies. Even with the availability of professional, pedagogical research into the use of technologies and their effect in the classroom, Flanagan et al. (2013) comment on the deficit of current literature that explicates the use and functions of mobile technologies in the classroom.

2.2.7. Teacher Technology Frameworks

Starkey’s (2011) digital age learning matrix provides a technology integration focus on transformational pedagogies by identifying the six ways in which children learn when using technology. The matrix is relevant as it ‘acknowledges the learning or knowledge that occurs between learners in a connected world’ (p.25), suggesting the student role changes from being doers to being creators of knowledge. Starkey (2011) augments the learning prerogative that occurs between learners using technology by defining this development from being firstly doers, to secondly, following a process of thinking about connections within the context of intended learning, to thirdly, thinking about concepts. Starkey’s progression continues to critiquing and evaluating
to finally being creators of knowledge. Starkey (2011) describes this progression as the change from looking up information on the internet to comparing and sharing ideas with another person to engaging with big ideas to exploring the limitations and potential of ideas to developing an original product to sharing ideas of connectedness, critique and creativity in a feedback cycle to others.

Donnelly, McGarr, & O’Reilly (2011) have further elaborated on transformational pedagogies from the teacher perspective with the focus on the shift from teacher-centred to student-centred pedagogy, dependent on teacher computer capability (Figure 2.3). Donnelly et al. (2011) argue that developing teacher technological competency brings higher degrees of empowerment and ownership by the progression of the teacher from Contented Traditionalist (limited methodological and ICT usage), to Inadvertent User (usage of technology as a school requirement), to Selective Adopter (strong ICT usage if good results are achieved), to Creative Adapter (ICT empowerment and confidence). Donnelly et al. (2011) cite the teacher’s sense of ownership of technology as well as professional development as empowering strategies for teacher progression.

![Teacher ICT Integration Model](image)

*Figure 2.3. Donnelly et al. (2011) Teacher ICT Integration Model.p.18.*
Such pedagogical progressions in the traditional/constructivist continuum of teacher formulation of technology integration and the progression through the levels of student technology-assisted learning outlined above inform a robust approach to the delineation of teacher and student roles in the classroom. Student roles change from the traditional approach to student learning where students are receivers and largely inactive in knowledge construction to being active participants, creating and communicating knowledge. Elsewhere, Prestridge (2009) further develops the case for teacher role change through the development of transformational practice within ICT professional development using both collegial and critical discussion to develop common understandings and transforming teacher beliefs. The adolescent digital culture has reinforced the need for a pedagogical change for teachers in their role as classroom facilitators to incorporate technological cultural changes in responding to middle school learners. Digital pedagogy is a good fit for the middle school classroom with the move from content-based disciplinary subjects to placing the learner at the centre of the meaning-making process and developing learner centred environments in the middle school classroom.

2.3. English Curriculum and Technology:

Kajder (2004) has adroitly stated that ‘Technology integration absolutely requires change in the role of the English teacher’ (p. 6). This argument for change reinforced by Kerin in her 2008 research on how digital technologies changed the classroom roles of four Middle and Senior English teachers (Kerin, 2008), and has also been echoed by Carrington & Robinson (2009) and other researchers in this field (Jenkins, 2006; Merchant, 2009; Prensky, 2012; Wellington & Levine, 2013). Kajder (2004) refers to the challenges a ‘tech-savvy’ English teacher faces when effectively
integrating technology into English instruction as being the ‘instructional designers [who also] become resource managers, juggling electronic files and resources, hardware and networks’ (p.7). These challenges extend their role as communication specialists to facilitate experiences that extend students’ thinking as writers, readers, and communicators. Kerin (2008) poses this role change as essential to fulfil the digital promises and challenges of the past two decades and to handle the competing demands of ‘mandated assessment programs, [menacing] measures of performance and managerialistic governance’ (p. 23). Kerin (2008) positively references this role change to the exciting analogy of space travel in a quest to bring a discipline-inspired response to the impact of digital technologies in English. Her triple threaded approach to a digital future in English involves ‘playful, sustained, professional training; equity, access, and ‘plain speak’; and engagement and collective advocacy’ (p.23). These are common themes in the literature under review in this chapter, which, are acknowledged by Kerin (2008) further as the ‘inconsistences and inadequacies ... of professional development, resourcing and collegiality, and which (italics mine) remove the burden of change from the creative teacher to schools and systems’ (p. 24).

Moyle (2010) similarly reinforces the case for teacher role change, pointing out that Australian curriculum subjects must become technologically enabled. In the case of English, this means integrating 21st century literacies. Turner (2011) signposts The 2008 National Council of Teachers of English definition of 21st century literacies as including accessing, producing, and distributing multimodal texts as an extension of historical multiple modalities like gesture, fashion and dance; building on traditional elements of phonics, comprehension, and writing; and using emergent technologies to pursue a ‘new capitalism’ (p.614) differentiated by increased globalisation and
technology. Kist (2010) argues for a balance between page-based and screen-based literacies which means covering the traditional strands of reading/viewing, writing, speaking, listening while also broadening the term ‘literacy’ beyond print-centric, page-based literacy to include digitally based media that is screen-based. Kist would explore digitally based media using compatible terms such as ‘new literacies, multiliteracies, multimodalities, information and communication technologies (ICTs), digital media, media literacy, and arts-based knowing’ (p.18). Formulations such as this are particularly pertinent for the purposes of this study in connecting the topics of literacy and subject English in the context of the digital millennium generation.

In Moyle’s (2010) view, school now prepares students for a new 21st century ‘new economy’, rather than a 19th century industrial economy, which is dependent on the production of knowledge where the key elements are innovation and communication. Moyle recognises the diversity of these terms such as those above (new literacies, multiliteracies, digital media, media literacy) and the value of defining literacy as including, media, digital and visual literacy. Moyle draws on Green (1988) in ‘proposing that for teacher and student to develop ICT literacy, three dimensions of literacy are required: the operational, the cultural and the critical’ (p. 27).

Technology has engendered a change in the role of the student in learning generally but particularly in literacy and in English to bring engagement and ownership of the learning process. Beavis & Greens’ (2012) argument for change as noted earlier based on the survey for media usage (computer games, virtual worlds and social networking) by young people between the age of 8 and 17, substantiates Moyle’s description of young people’s patterns of technological usage. It is also consistent with Turner’s (2011) account of literacy development through digital story telling.
using multimodal media production, and Kajder’s (2004) work with weblogs, collaborative online poetry projects, interactive language tools and visual ‘think clouds’ using iMovie.

An important part of digital culture, and young people’s engagement with it, is participatory culture (Jenkins’ et al., 2006). Calling on this notion, Merchant (2009) argues that the participatory practices of media usage and digital technologies have engendered a social participation through a sense of connectedness between students and students and students and teachers as both become producer and consumer in the learning process. Merchant (2009) argues that students are apprentices in a participatory culture and that the teacher may not only be the craftsman in this apprenticeship but in fact, at times, may be the apprentice also:

The children themselves draw on different funds of knowledge and help each other, older ones act as ‘buddies’, and visitors to their blogs contribute too ... participating in a digitally mediated culture ... children and teachers become active in a new mediascape, an online environment in which knowledge and learning are distributed. (p.114)

This new mediascape evokes ideas of sharing and working together, stressing a collaborative or collective experience, emphasising the social dimension as a necessary part of learning thus suggesting, as stated by Merchant (2009), a change in the roles of student and teacher:

Furthermore, they (computer technologies) invite new ways of thinking about the production and circulation of the artefacts of learning, the reconfiguring of relationships between learners and experts, as a well as teachers and their teaching resources (emphasis mine) (pps. 119/120).
Whether seen from the perspective of the student, the teacher or the curriculum developer, the face of English has changed irrevocably with technology integration proposing a retheorising of texts, methodology and student engagement. This change anticipates both the excitement of Kerin’s ‘space journey’ and the unexplored realms of Space Odyssey 2001. In the educational technology context, it is liberating teachers and students from the rigid hierarchies of being locked to desks, classrooms, curriculum and assessment, and mobilising multiple activities as mediators of learning. Jenkins et al. (2006) envisioned such change as ‘absorb(ing) and respond(ing) to the explosion of new media technologies that make it possible for average consumers to archive, annotate, appropriate and recirculate media content in powerful new ways’ (p.8).

2.4. Constructing Technology Integration Models

Balancing the pedagogical, content knowledge and technological integration needs of the classroom, Mishra & Koehler (2006) have developed the Technological Pedagogical Content Knowledge (TPCK) model (Figure 2.4) as a theoretical grounding based on Shulman’s (1986) formulation of pedagogical content knowledge. Mishra & Koehler (2006) add the dimension of teacher integrated technology providing a complex, multifaceted, situated form of knowledge. TPCK highlights the connections and interactions between Content Knowledge (subject matter that is taught), Technological Knowledge (computer, the Internet, digital video, etc), and Pedagogical Knowledge (practices, processes, strategies, procedures, and methods of teaching and learning):

Good teaching is not simply adding technology to the existing teaching and content domain. Rather, the introduction of technology causes the
representation of new concepts and requires developing sensitivity to
the dynamic, transactional relationship between all three components
suggested by the TPCK framework (Mishra & Koehler, 2006).

Figure 2.4. TPCK Model (Koehler & Mishra, 2008, p.24)

The perspective provided by dealing with demarcated areas of professional
knowledge has significant benefits for teachers, administrators and curriculum
planners when dealing with educational systems that employ standards-based
curriculum. These include, for example, both The Australian National Curriculum,
where content knowledge is systematised and technology integration is mandated,
and state systems where pedagogical strategies are specified. Perhaps the greatest
value of the model is in its representation of a professional orientation as it prompts
teacher reflection about their knowledge and practices on the use of technology
rather than assuming a fixed knowledge base of teaching with technology. Even
within the Australian National Curriculum there is room for dialogue with teacher
and student-developed content. Mishra & Koehler (2006) describe teachers as
‘producers of knowledge’ and students/scholars as ‘creating new knowledge in the discipline’ (p. 24) where both use demarcated areas of knowledge as starting points for the journey of discovery.

TPCK as a theoretical model is not advocating separation of technology, pedagogy and subject content but rather a connection and interaction that is, a transactional relationship, between the relevant components. The TPCK framework allows the researcher to investigate the relationship between all three areas of technology, pedagogy and content. It also highlights a working relationship between the three for effective teaching and learning thus requiring a different form of expertise rather than the broader knowledge for a technology expert or a disciplinary expert. TPCK thus forms a useful organizational framework to refine how teachers integrate technology effectively and to research how students respond to a new learning environment, by giving prominence to authentic teacher and student voice in a real-life situation (Archambault & Crippen, 2009).

The interrelationship between teacher and student roles in the production of knowledge that the TPCK model proposes has been highlighted by Koh, Chai, & Lee (2015) as a significant area of study as it relates to ‘the effects of teachers’ TPCK applications on students in terms of learning outcomes and their (students’) conceptions of learning with technology’ (p. 460). This concern is central to the research question addressed in the present study, namely ‘How might the role and relationship of teachers and students change when using ICTs in an online delivered middle school English curriculum, specifically, a Year 9 poetry unit?’ Therefore the TPCK framework is used as a lens to examine teachers; observations concerning their pedagogy and student perceptions of their learning. While the TPCK model was designed to address the role of teachers in developing/utilising technology, pedagogy
and content knowledge, in this study the TPCK framework is also used to explore student response and engagement, and the conceptualisation of English in the context of technology integration thus giving a student voice to technology integration in English. Extending the TPCK framework in this way to address students’ perceptions of their learning has been foreshadowed by Archambault and Crippen (2009). Although Archambault & Crippen’s (2009) priority field of study was the TPK knowledge of K–12 online distant educators, they, in citing Niess (2005), acknowledged that one of the essential components that offer a framework for the development of TPCK in teacher education programs is ‘knowledge of students’ misconceptions, understandings, thinking and learning in a particular subject matter and how these might be represented using technology’ (p. 73). In their concluding comments, they observed that ‘modifications of models that influence the way knowledge is conceptualised were needed’ (p.84). Their study suggested ‘that perhaps a different structure was needed to describe the domains of technology, content and pedagogy and their possible interactions’ (p. 84), to further inform the TPCK model. Hofer and Swan (2009) drew similar attention in regard to students in their analysis of the effectiveness of TPCK model commenting that the model highlights ‘students are challenged to deeply research, understand and represent content knowledge in dynamic and creative ways’ (p.196) and that ‘beyond the engagement factor, students are ... developing their own narratives and voices – but within a new medium, bringing together new challenges’ (p.196).

Angeli and Valanides (2009) attempted to further develop the model by proposing ICT-TPCK as an innovative strand of the TPCK framework. Their adaptation ‘acknowledges the constituent knowledge base, namely subject matter knowledge, pedagogical knowledge, and technology (restricted to ICT) but adds two additional elements, student knowledge or learner knowledge (TCL) and context knowledge
Building further on this model, Saad, Barbar, & Abourjeili (2013) proposed TPCK–XL as an enhancement of ICT–TPCK. They describe this development as ‘a transformational view of TPCK with a special emphasis on the educational technology knowledge constituents and acknowledgement of the learner and context knowledge as basic constituents of TPCK-ICT’ (p.10). Saad, Barbar & Abourjeili (2013) acknowledge that this perspective is rooted in educational psychology and sociology. These theoretical underpinnings do not diminish the focus of TPCK on the role of learners’ knowledge (and context knowledge) in pursuing effective teaching practices, they argue, but firmly underline the reciprocal nature of pedagogy and learning, highlighting learner knowledge as important core knowledge bases. This suggests the appropriateness of utilising TPCK as a theoretical framework for analysing both teacher and student roles in technology integration.

Coming from a sociocultural, critical literacy perspective, Parr, Bellis, & Bulfin (2013) have questioned the TPCK approach to technology integration citing the existing theoretical framework as lacking theoretical clarity. They point to the assumption of demarcated area of knowledge (PCK), the bureaucratic use of the methodology for standardised systems and the commercialisation of education that stems from this usage. They further argue that the model ignores ‘the complex mediating role of language in the production, communication, interpretation of and engagement with knowledge and the influence of culture and history in these interrelated processes’ (p. 15). However, in criticising the conceptual looseness of TPCK and the commercialisation of the methodology, critics such as Parr, Bellis, & Bulfin (2013) overlook the pragmatic value of such a framework to both teachers and students alike who are encouraged to experiment with technology integration. Newhouse (2014) in particular, makes the point that TPCK equips teachers ‘with the
capability to plan and implement computer use to support pedagogical strategies appropriate to convey particular curriculum content’ (p. 477).

Another framework, the SAMR model, which was developed as a companion to the TPCK model, can also provide a complimentary lens to view the data in this study. Puenteledura (2006, 2008) further developed the TPCK model by offering the SAMR model (Figure 2.5). The model used the theoretical underpinnings of Mishra & Koehler (2006) to focus on student ICT development from being enhancers to transformative users of technology based on the four levels of student technology usage, namely: substitution, augmentation, modification, and redefinition. Substitution as the lowest level uses technology as a direct substitute for lower forms of technology (e.g. Word document for hard copy); augmentation as a direct substitute for a previously used tool with some functionality not present in the original tool; modification as a significant redesign by the introduction of new technology; and redefinition as new task previously inconceivable without technology. While all of these levels are useful and valuable in the appropriate context, Puenteledura identifies substitution and augmentation as enhancement practices whereas modification and redefinition are identified as transformational practices. SAMR acts as an integrating tool for technology focusing on the appropriate tool but when used in conjunction with TPCK, becomes an analytical tool for interaction with pedagogy and content knowledge as well as student transformational learning (Chou, Block, & Jesness, 2012).
Figure 2.5. SAMR Model (Puente, 2006)

SAMR was utilised by Chou et al (2012) in their case study of a mobile learning pilot project in K-12 Schools which focused on student transformation learning, and by Keane & Blicblau (2012) who aligned the SAMR model as an ICT model development from the 3Rs (Reading, (w)Riting and (A)Rithmetic) and the 4Cs (Critical Thinking, Communication, Collaboration and Creativity). The contribution of the SAMR model to technology integration is the focus on student transformational learning in terms of collaborative learning and skill development as well as the design framework for pedagogy. Keane & Blicblau(2012) trace the theoretical development of student transformational models such as SAMR from their roots in Bloom’s Taxonomy, Biggs & Collis’ SOLO Taxonomy, Gardiner’s Multiple Intelligences, De Bono’s Six Thinking Hats, Costa & Kallick’s Habits of Mind, to the educational 21st century skills mandated by the Australian Curriculum (ACARA, 2012). Romrell, Kimmer & Wood (2012) have further developed the SAMR model as a framework for evaluating mobile and digital learning, and supporting transformation of learning through technology integration.

The SAMR model parallels the work of Prestridge (2007) in her examination of the move from the attainment of ICT skills to the use of ICT in learning through teachers’
own pedagogical frameworks. Prestridge (2007) compared the Smart Classroom Professional Development Framework, an initiative of The Department of Education and Training (DETA), with Dwyer, Ringstaff & Sandholtz’s (1991) ‘Model of instructional change’ (Figure 2.6).

**Figure 2.6. Prestridge’s Professional Development Model (2007, p.7)**

There is a close correlation between this model, The Model of Instructional Change, the SAMR Model, and by extension, the DETA Smart Classroom Professional Development Framework, in identifying stages of entry, adoption, adaptation, appropriation, and invention. The main difference between the two is the orientation of the SAMR model to student usage and the DETA model (Prestridge, 2007) to teacher development. Regarding the DETA model, Prestridge (2007) states:

Adaptation identifies teachers who are adapting their existing curriculum practices to integrate ICT. This is acknowledged in the Framework at the level of an ICT Pedagogical Licence. Transformed pedagogy could be considered as a new
paradigm for pedagogy infused with ICT. What is important to teachers striving for effective pedagogical practices with ICT is enabling the transition from the stage of Adaptation to the stage of Appropriation (p. 5).

Prestridge’s (2007) statement comes with the condition that transformation change in pedagogy using ICT frameworks does come with a re-forming of teacher beliefs and practices through ‘reflection on their teaching practices, challenging old practices ... and embed(ing) a reflective action process for pedagogical renewal’ (p.5). This requirement to incorporate digital technologies ‘challenges pedagogy grounded in print culture and provides opportunities to explore alternate approaches to working with students’ (p.5). Prestridge’s model was developed for Education Queensland schools but has the wider usage in the analytical framework it assists in identifying for the teaching roles of adopter, adapter, appropriator, and inventor.

This identification of the teaching roles clarified by Prestridge (2007) becomes an informative element of this thesis in investigating whether and how teachers’ roles changed as a consequence of teaching using technology. Prestridge’s professional development model (2007) fits all the criteria for empowering teacher role change in a technology integrated classroom in that it uses the skeletal frameworks of TPCK, SAMR, DETA’s Smart Classroom Professional Development Framework and Dwyer’s, Ringstaff’s & Sandholtz’s ‘Model of instructional change’. Prestridge’s (2007) professional development framework enlightens this study by investigating teachers’ development practices while integrating technology into the poetry unit.

A different perspective on the ways in which technology interacts with classroom practice, and with literacy in particular, is provided by Green’s 3D L(IT)eracy model (Durrant & Green, 2000; Green, 1999). This model provides a practical and theoretical framework to effectively evaluate the integration of the operational, the
cultural and the critical dimensions of student and teachers; engagement with technologies in this study; and the ways in which roles and relationships in the course of the ICT poetry unit changed. In this study, the model is used as a lens to analyse the ways in which the roles and power relationships between the students and each other, and the students and the teacher, changed and the critical lens is of particular use in this study. These relationships are explored specifically in accordance with Merchant’s identification of teacher/student roles of producer and consumer and craftsman and apprentice with reference to the new mediascape of participatory culture (Jenkins et al., 2006; Merchant, 2009). The operational lens is used to consider the ‘how’ and ‘why’ the integration of technology into English may change role relationships in the classroom, while the cultural lens focuses on identifying the main factors that give meaning to the roles of teachers and students and provide context for the perspective of possible change in learning and teaching roles.

2.5. Summary

Synthesising the theories and frameworks outlined in the literature review, this research will utilise the TPCK and Green’s 3D model to analyse teacher function and roles, making reference to traditional/constructivist pedagogical continuum and Prestridge’s model of instructional change where applicable. Student function and roles will be analysed using Green’s 3D model referencing Starkey’s (2011) digital age learning matrix and the SAMR Model of transformational learning as applicable.

Moyle (2012) quoted the futurist Alvin Toffler 30 years ago that ‘the illiterate of the 21st century will not be those who cannot read or write but those who cannot learn, unlearn and relearn’ (p. 4). In contemporary times, this means teachers and students can create new artefacts, materials and knowledge with constantly evolving tools as
individuals and companies produce and refine new software. This adaptive, transformational role is applicable to both teachers and students and Toffler therefore appropriately summarises the literature review regarding the changing role of teachers and students in a technology integrated English classroom.

The literature review supports the assumptions of this research that middle school students possess a level of computer competency that allows for their engagement in an integrated computer technological English unit of work. It confirms that technology integrated learning has been shown to give ownership of learning, developing literacy and English skills in the transitional years from Primary to Secondary school. It has been demonstrated from the literature that technology integrated English curriculum posited with collaborative learning can engage middle school students in particular and that such technological integration anticipates and can precipitate a change in the roles of teachers and students.
Chapter 3: Research Method and Methodology

3.1 Introduction

This research explores the perceived reciprocal nature and roles of the teacher/student relationship in an ICT based English unit in a middle school framework, specifically, a Year 9 poetry unit. It investigated whether the computer technology integration in the English curriculum might bring about perceived change in the teacher/students roles and relationships. It also investigated whether computer integration in English might promote student engagement and learning and whether and how the English teachers involved were able to adapt their teaching roles to integrate computer technology. Using case study methodology to investigate contemporary phenomenon within a real life context (Yin, 2003), the research focussed on a fixed cohort of students and their teachers to investigate the effects of the integration of computer technology into the curriculum, as well as comparing teacher and student response to the changes in their respective roles in learning and teaching. Data for the case study were collected through teachers and students posting their responses to open-ended online survey questions on their class blog site at suitable intervals. Teachers also participated in a focus group exit interview at the conclusion of the project. A mixed-methods analytic approach was utilised which allowed the researcher to gain a deeper understanding of the central themes regarding both teacher and student roles.

This chapter provides a comprehensive overview of the research design and methodology undertaken. The first section outlines the aim and research questions, and provides insight into the research setting, and the assumptions, context, purpose, theoretical framework and analytical framework that inform the research. The chapter then outlines the research phases, the methods of data collection, along
with the data analysis techniques. The ethical considerations of the research are then addressed.

### 3.2 Aim and Research Question

In order to explore the ways in which introducing technology into classes changes the perceived roles of teachers and students, this research focused specifically on the area of KLA English. I sought to determine what young adolescents report about their perceptions regarding (a) increased engagement in learning, (b) how they use technology in English, and (c) how technology aids their understanding of content. I also sought to determine how teachers respond to (a) the challenge of integrating computer technology into their pedagogy, (b) how technology integration may change their relationship with students and each other, and (c) what this might mean in terms of recommendations for the English curriculum and classroom practice.

The research question being investigated was: ‘How might the roles of teachers and students change when using ICTs in a middle school English curriculum, specifically, a Year 9 Poetry Unit?’ The project investigated any perceived change in roles between teachers and students as they engaged with an integrated online computer technology poetry unit.

#### 3.2.1 Research Setting

This research was conducted within an all-boys Year 5-12 private Catholic College in regional Queensland. The school is 115 years old with approximately 890 students and is considered to be in the average range for socio-economic status. In addition, it provides for marginalised boys from various backgrounds; however, a majority of families considered middle class with both parents working. The school has a growing reputation of academic and sporting achievement and is recognized as a
leader in boys’ education and IT implementation in the region. As well as setting high standards across all areas of school life, the college is experiencing strong enrolments in all grades. The research focused on the middle years of schooling, specifically the 2010 Year 9 cohort of students and their teachers in the middle years of schooling in 2010. As the then Head of Department English, I developed and wrote the online ICT poetry unit in association with the Head of IT. Also, as a teacher of Year 9 English, I was also a participant in the research. The paradigm of being in a position of power as both a participant and researcher is detailed in section 3.6.1 of this study.

The unit, specifically designed for the study (see Appendix 3) as a transition into the school’s proposed technology integration program, consisted of three parts; (i) The Introduction, (ii) poetry analysis called Poet Laureate for a Term, and (iii) visualising poetry called Seeing Poetry. The Introduction consisted of a review of poetic devices using Clickview (a school intranet resource), choosing poems on a theme from hyperlinked sites, self-directed work on interpretation and poetic devices in poems hyperlinked to Power Point presentations and work sheets which were placed on a class forum site for peer and teacher response. The Poet Laureate for a Term section directed students to compose their own Prezis with their choice of one poetic device, working in groups of six for peer sharing of all poetry devices, and then linking with others who chose the same device to compare Prezis. This was followed by students’ own poetry composition using all poetry devices together with a written analysis of their poem which were posted on the class forum. The final section, Seeing Poetry, required students to film one of their poems using interactive story boards, digital cameras and Microsoft Movie Maker. For the purposes of data collection which will be explained later in 3.4, teachers and students were asked to post their responses to open-ended online survey questions at suitable intervals on their class blog site.
The poetry unit was delivered through an intranet web based program called Connected Learning Communities (cLC) currently in use in the school and utilized internet and computer resources. All classes were assigned the use of a computer room with all students and teachers simultaneously accessing the program online using the school desktops. As students had access to the program from home, they were also assigned unfinished class work for homework.

### 3.2.2. The Sample

The sample group of 107 Year 9 students and four Year 9 English teachers was selected from the sample frame of middle school year levels, Year 8 and 9, as corresponding to the typical Year 7-9 middle years Queensland population, with students ranging in age from 11 – 14 years of age (Luke et al., 2003). The English teachers were already allocated by the school to this age group and had been teaching them for the whole year. This sample would allow transference of the findings of the study as it firstly aligned as a representative group with the middle school age group within the school, and, secondly, it aligned with typical Year 9 age groups across the state. In gathering and analysing information about this sample, the findings should therefore be transferable to the middle school group within the school as informing the 1-1 laptop program as well as being transferable to other middle schools in Queensland envisioning integrating ICTs into the English curriculum (Cresswell, 2008).

### 3.2.3 Recruitment method

With the principal’s permission, teachers and students were invited to participate on a voluntary basis. Students were addressed at a cohort meeting to give an overview of the project with an explanation of their role in the project. Further discussions between class teachers and students took place in class groups and students were
given the opportunity to discuss the project further with their parents, teachers and
the researcher. The project was explained to parents through both the school
newsletter and a personal letter home to parents with options of speaking to the
researcher or the principal and their child’s participation in the project was optional.
As the project aligned with course evaluation requirements and supported teachers in
monitoring the effectiveness of the online unit in teaching English curriculum, the
project was supported by the school, teachers and parents and students. The
principal indicated and the Griffith University Ethics Committee agreed that given
the alignment with the school’s curriculum, verbal agreement need only be sought
from the students concerned.

Following a group explanation and discussion session which outlined the nature of
the poetry unit and the focus of the research, the four teachers involved were given
the option to participate and consent forms to sign and return by a given date.

3.2.4. Identification of Participants

To promote equity in the project all participant information remained private with
pseudonyms and group data being reported (Gay & Airasian, 2003). The school’s
privacy was preserved by describing it as a single sex, regional, private secondary
school and teachers were identified by pseudonyms (Adam, Ben, Charis, Dianne)
with introductory descriptions (see table 3.1) such as male/female, longevity of
teaching experience and their own assessment of their computer skills (undeveloped,
developing, well developed and extremely well developed)(Creswell, 2008).

Table 3.1.

*Teacher coding and descriptions*
In collating data from the student surveys in preparation for analysis, students were only identified in classes corresponding to their teachers: for example, A9 in Adam’s class; B15 if they were in Ben’s class; C6 if in Charis’ class; and D22 if in Dianne’s class. Giving pseudonyms made teachers more human that using letters or numbers and was appropriate for qualitative methodologies and analysis where personal observations and experiences were being examined rather than objective data.

### 3.2.5. Assumptions

Inherent to the study are the assumptions that:

- Teachers will bring previously developed pedagogies to technology integration;
- Teachers as lifelong learners will adapt to the new teaching environment, by acquiring technology skills and changing teaching styles;
3.3 Methodological Paradigms

3.3.1 Theoretical Framework: Case Study

The study was undertaken following case study methodology with 107 Year 9 students in four English classes following their and their teachers’ engagement with technology in an online delivered poetry unit. In terms of a holistic, in-depth investigation, the case study methodology provided the intensive means over a whole term to gather detailed data through student and teacher surveys and a focus group teacher exit interview on perceived teacher and student experiences while integrating technology. Following Cresswell’s (2008) observation, case study methodology allowed the researcher ‘to search for the shared patterns that develop as a group interacts over time’ (p.476) as the focus was on an in-depth exploration of the actual case. Cresswell (2008) further describes this case study by the term ‘bounded’ (p.476) as the case has been separated out for research in terms of time, place and a specific group of students and their teachers – a real life context that investigates phenomena as they happen. As the research focuses on a single instance of a larger class of things, the boundaries of the case are clearly defined. Using Cresswell’s (2008) term, the case is in itself ‘intrinsic’ (p.476) as it has merit in and of itself as it is unusual to research a whole cohort of Year 9 students with their teachers with access to technology over a whole term in English.
Freebody (2003) indicates that what is critical in case study is not only a clear statement of the object of reflection and a readiness to describe unforeseen circumstances but also ‘a commitment to interpretation, a focus on issues, on the value and utility of stories, verifiable and otherwise, and on the need for validation through multiple accounts of a phenomenon’ (p 82). Therefore, Freebody’s (2003) guidelines inform this case study which is based on the perceived statements of both teachers and students focussed on the issues of changed roles and relationships when technology is integrated with a poetry unit ‘with the aim of making principled but naturalistic generalizations’ (p.82) about such role and relationship changes. The case becomes a ‘clearly known and readily defined discursive, conceptual and professional space’ (p.83) which allows the investigation of the consequences for teaching and learning of people’s actions, in this case, the teachers and students in the Year 9 cohort.

Yin (2003) states that a case study provides the opportunity ‘to explain complex casual links in real-life interventions’ (p.13) by exploring the relevant interactions between the participants in the case study. Case study methodology was chosen for this research as it allowed in-depth exploration of a specific group and instance, in this study the actual effects of ICT integration on teacher and students roles and relationships over a specified period of time. The case study approach provided a framework within which to explore the ways teacher/student roles and relationships changed within the real-life context of the Year 9 cohort when computer technology, subject content, and pedagogy were integrated. The case study approach provided a framework to investigate whether computer integration affected perceived student
enjoyment and engagement in English and whether teachers’ perceived pedagogical approaches changed with this intervention.

Using case study methodology, the research focused on a fixed cohort of students and their teachers to investigate the effects of such integration as well comparing teacher and student response to the changes in their perceived respective roles in learning and teaching in the integration of technology. Cresswell (2008) affirms that data collected in a case study typically involve ‘the collecting of multiple forms of data’ (p. 477) which, in this case study, included: (a) student online surveys which blogged their scaled responses to the questions aligned to the TPCK framework; (b) blogged student comments on the school cLc intranet explaining student responses to their scaled responses; (c) teacher blogged responses to the online surveys on the school cLc intranet system in response to the questions aligned to the TPCK framework; and (d), a transcript of the digital recording of a teacher focus group exit interview. Freebody (2003) describes the multi-perspective approach as ‘triangulation’ (p.266) which is the process of collaboration evidence from different individuals (teacher and student), types of data (blogs from questionnaires, interviews), or methods of collection (surveys, interviews). As such, the case study methodology is a triangulated research study which fulfils the ethical need to confirm the validity of the processes through multiple sources of data. Using multiple forms of data allowed the researcher to explore in detail the different viewpoints of the participants and to apply the findings from multi-perspective analyses to consider not just the voice and perspective of the participants but the interactions between them which Freebody (2003) describes as an attempt ‘to document the story of a naturalistic-experiment-in-action’ (p.82).

Following Cresswell’s (2008) guidelines, the case study methodology allowed the researcher to conduct an in-depth study of an ‘intrinsic case’ (p.476), with the case in
this instance being the experiences of the target group of teachers and students in the Year 9 cohort integrating poetry and technology. The gathering of such in-depth data from the perceived experiences of the target group allowed the researcher to develop an extensive understanding of what happened when teachers and students worked with the poetry and technology integration as they did and to make recommendations for future research. The intrinsic nature of the case study was of interest due to the unique situation of the researcher being part of the target/client group and a participant in the case study, thus having the advantage of providing intrinsic as well as extrinsic knowledge. This allowed the study to be conducted from a ‘naturalist’ assumption uncovering the causal elements and the authentic nature of a social event (Given, 2008). Freebody (2003) highlights the worth of this approach in that such research in ‘the natural habitat’ of the people the researcher is studying allows ‘the research to be close enough … to do justice to the complexity and subtlety of social experience’ (p.57). However, he does warn of the necessity of ‘neutral disposition’ (p.57) on the part of the researcher, and taking the precaution of ensuring there is triangulation of multiple data sources, the use of multidisciplinary approaches, and fidelity to people’s stories. In this instance, student and teacher survey blogs, the exit focus group interview with the teachers, and the researcher’s awareness of the need to be as dispassionate as possible contributed to the capacity of the research to be appropriately neutral while maintaining its closeness to the ‘natural habitat’ of lived practice.

3.3.2 Analytical Framework: TPCK

As the main purpose of this study was to explore the nature of the changing role of teachers and students in a computer technology integrated poetry unit, it was necessary to select a theoretical framework that generated research questions for the
teacher and student surveys. The framework chosen had to relate to in teachers’ and students’ environments as well as being relevant to the domains of computer technologies, pedagogy/learning, and English content. TPCK was used to generate the core open-ended questions for the teacher and student surveys. Teachers used the open-ended survey questions to comment on their pedagogical knowledge via teacher blogs and reflected on their experiences during the project in the focus group exit interview. Students commented on their observations of change in their own learning experiences via their class blogs in response to similar open-end questions as the teachers. The emergence of TPCK in the 2006-2009 era as a practical academic paradigm for classroom pedagogy and student learning provided a working framework in which there was little or no difficulty for both teachers and students to respond to and it fitted neatly into the context and topic of the study.

As outlined in section 2.4, TPCK was used as an analytical framework to investigate the perceived interaction of technology with poetry content, teacher pedagogy and student learning. The results of both the quantitative and qualitative analysis of the student data were compared against the TPCK framework to reflect on perceptions of student Technology Knowledge (TK), student subject content knowledge (CK), student learning knowledge (PK), and to investigate the reciprocal relationship between each of the knowledge areas (TPCK) in regard to the students’ experiences. This analysis was used to inform this study on the effects of teachers’ TPCK application on students in terms of students’ perception of learning as outlined by Angeli & Valanides (2009) and Saad, Barbar, & Abourjeili (2013) and elaborate on the transformational view of TPCK from the student viewpoint in the reciprocal relationship of teaching and learning. The TPCK framework was also utilised to investigate the interconnectedness of technology knowledge (TK), pedagogical knowledge (PK), and subject content knowledge (CK) in teachers’ thinking, talk, and
practice as revealed by the qualitative analysis of the teacher survey data and the focus group exit interview explained in section 3.5.2 (p. 79). The TPCK framework provided the platform to highlight the transactional relationship between the essential elements of technology, pedagogy, and subject content.

### 3.3.3 Teacher Pedagogical Frameworks: Levels of Learning with Technology

A further analysis of the teacher data collected through the teacher surveys and the focus group exit interview was undertaken mapping perceived teacher responses against Prestridge’s teacher pedagogical frameworks (2007), and Starkey’s (2011) digital age learning matrix. The Teacher Pedagogical Framework refers to DETA’s Smart Classroom professional Development Framework which reflects the Dwyer, Ringstaff & Sandholtz (1991) ‘Model of Instructional Change’. The Model of Instructional Change was used to analyse the teacher qualitative data collected through the teacher surveys and the focus group exit interviews. The digital age learning matrix (Starkey, 2011) was used to contrast the descriptive analysis of student quantitative responses from their online survey responses and the Leximancer analysis of the qualitative comments in the student surveys, explained in section 3.4.3. These frameworks provided a more detailed analysis of the teachers’ data which were shown to be consistent with Ertmer et al.’s (2011) progression from teacher-centred to student-centred pedagogies and Donnelly et al.’s (2011) Teacher ICT Integration Model.
3.3.4 Other Theoretical Frameworks

Finally, as outlined in section 2.4, Green’s (1998) 3D model combined with Merchant’s identification of teacher/student roles to reference the new mediascape of participatory culture (Jenkins et al., 2006; Merchant, 2009), was employed to look more closely at the ways in which power relations in the classroom changed teacher and student roles with the introduction of technology. The three lenses of critical, operational and cultural dimensions were brought to bear on the data. These lenses were used to explore shifts in roles and power consequent to the introduction of technology (critical dimension), the ways in which technology integration contributed to the role changes through students’ increased capability to use technology (operational dimension), and some of the key factors that gave meaning to the roles of teachers and students, and to provide the context of role change (cultural dimension).

3.4 Research Design

3.4.1 Data and Data Analysis

Data were collected from student surveys that included five point scale responses to TPCK designed questions as well as room for free text explanations for those responses. Data were also collected from teacher surveys with free text comments to TPCK designed questions and a focus group interview at the conclusion of the project (see Figure 3.1)
In analysing the data, descriptive quantitative analysis and thematic and qualitative analysis using grounded theory (Cresswell, 2008) were employed. Adhering to
Cresswell’s (2008) research, descriptive analysis of the quantitative data was used ‘to indicate general tendencies or trends in the data, the spread of scores, or a comparison of how one score relates to all others’ (p.190). Grounded theory approach (Cresswell, 2008) was used ‘to generate a general explanation that explained a process, action, or interaction among people’ (p. 61) and that composed an explanation by developing and relating categories or themes that are grounded in the data of the participants. Cresswell (2003) further specifies the concept of thematic analysis as similar to using codes aggregated together to form a major idea in the database. Thematic analysis could produce ‘30-50 codes or themes’ which, with further analysis, may ‘reduce these codes to five to seven major themes by eliminating redundancies… with some minor themes emerging’ (p.257).

3.4.2 Methods of Data Collection

Four Year 9 classes comprising 107 students and their teachers undertook the poetry unit examined in this unit. The same student online surveys were administered at the beginning and end of the unit, in which students were required to answer online using their class blogs on cLc responding on a five point Likert scale to five TPCK designed questions (questions 1,2,3,6, and 7) and two further questions (questions 4 and 5) as to how their learning changed and surveyed at the beginning and end of the poetry unit. Questions 4 and 5 were added as an innovative approach to broaden the TPCK framework to analyse student learning in response to the work of Koh, Chai, and Lee (2015) to reinforce the reciprocal nature of pedagogy and learning as it highlights learner knowledge as an important core knowledge base from which teachers apply the pedagogy.

They were also asked to make a short qualitative comment on the reasons for their response. At the beginning and end of the unit teachers were also asked to complete
online surveys using their teacher blogs on cLc in response to questions based on the TPCK framework and two further questions as to how their teaching changed and how their students’ learning roles changed, surveyed at the beginning and end of the poetry unit. These questions corresponded to those asked in the student surveys. At the conclusion of the poetry unit, a focus group exit interview was conducted with the teachers again using five focus group questions based around the TPCK framework with the two added questions on changes in their teaching role as well as changes in their students’ learning roles.

Table 3.2.

Case Study Overview: Phase 1, 2 and 3 - teacher and student data collection

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<tr>
<th>CASE STUDY</th>
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<td>Quantitative Data Collection</td>
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<td>surveyed at the beginning and end of the poetry</td>
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<td></td>
<td>Qualitative Data Collection</td>
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<td>to why they chose their scale and two further</td>
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<td>how their learning changed and surveyed at the</td>
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<td>beginning and end of the poetry unit</td>
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Phase 2 – Teacher Collection

- Four teachers’ blogs in response to the five TPCK questions and two further questions as to how their teaching changed and how their students changed, surveyed at the beginning and end of the poetry unit

Phase 3 – Teacher collection

- Focus Group Exit Interview with four English teachers at end of project

Students in four different classes with four different teachers in four computer rooms over 11 weeks followed the online designed poetry course integrating ICTs and poetry. The Year 9 cohort was selected as a middle school group who had access to the computer rooms for the duration of the data collection. During this time, the following data were collected:

- Two surveys at the beginning and end of the data collection period from students from all classes responding to questions based on the TPCK model and two further questions as to how their learning changed;
- Two surveys from teachers at the end and the beginning of the data collection period similar to the student questions;
3.4.2.1. Phase 1: Student Survey

Students’ survey questions were guided by the TPCK framework asked to address a similar set of questions in their surveys with some changes to make the questions more appropriate to their learning experiences in the unit, namely:

In this week’s English lessons:

1. On a scale of 1 – 5 where 5 is ‘very well’ and 1 is ‘very poorly’, how well have you worked with technology AND ..... What worked well and what was difficult?

2. On a scale of 1 – 5 where 5 is ‘very well’ and 1 is ‘very poorly’, did you understand the poetry content AND ..... What was the hardest and the easiest part?

3. On a scale of 1 – 5 where 5 is ‘very much’ and 1 is ‘very little’, did you enjoy learning AND ..... What was the most enjoyable and least enjoyable thing?

4. On a scale of 1 – 5 where 5 is ‘helped a lot’ and 1 is ‘hindered a lot’, did others help or hinder the learning AND ..... What happened?

5. On a scale of 1 – 5 where 5 is ‘helped a lot’ and 1 is ‘hindered a lot’, did you help or hinder the learning AND ..... What happened?

6. On a scale of 1 - 5 where 1 means 'changed very little' and 5 means 'changed a lot', has there been a change in your learning? Describe any changes you noticed in how you are learning.
7. On a scale of 1 - 5 where 1 means the changes have been 'for the worse' and 5 means the changes have been 'for the better'; are these changes good or better/worse than you thought? Why?

3.4.2.2. Phase 2: Teacher Survey

The teacher surveys were asked to address similar questions to the students guided by the TPCK framework and two further questions as to how their teaching changed and their students' learning roles changed namely:

- What were the positives and negatives in my use of technology in this week’s lessons?
- What were the hardest and easiest elements of the content of this week’s lessons?
- What made this week’s lessons a success and what aspects were not as effective?
- How did other teachers contribute to my teaching experience and how did I theirs?
- My role: what differences did I note to my normal teaching practices?
- Student role: What differences did I note in my students’ participation/engagement?

3.4.2.3. Phase 3: Teacher Focus Group Exit Interview

After teachers had completed their blogged survey responses on line, an focus group exit interview was also conducted with the four teachers with similar questions to the five TPCK questions and two further questions as to how their teaching changed and how their students’ learning roles changed, namely:
• Going around the group, would you please describe in your own words your general response to implementing the Integrated Technology Poetry Unit?

• How did these compare to your original expectations about participating in this project?

• What was your experience in using technology in this unit of work?

• How did your experience with technology relate to your expectations coming into this project?

• In terms of teaching the poetry content, what content areas were you comfortable with and what areas caused difficulty?

• Were your original perspectives about content difficulty and comfortability realistic?

• Pedagogically, did you use any teaching strategies that you found valuable?

• Did you implement any teaching strategies that were less effective in the unit?

• What were the most helpful aspects you valued from the teaching staff?

• In retrospect, are there any aspects you would have found helpful to have received from the teaching staff?

• Did you note any change in your role as teacher in the classroom?

• Specifically, did the use of technology change your perception of the teacher’s role in the classroom?

• Did you note any change in student learning behaviours during the course of the unit?

3.4.3. Data Collection for Quantitative Analysis

The quantitative student data collection tool in the form of individual surveys posted on the class forum by students was delivered via the intranet web based program Connected Learning Communities (cLc). Confidentiality for students was preserved
by only allowing the researcher only to have access to student surveys. Surveys allowed a greater level of ease than interviewing students which would have narrowed the response to a limited focus group. All students in the cohort agreed to participate in the research with parental knowledge. It also provided a straight way to collect student data as each teacher agreed to direct students to complete the surveys as part of the normal class room activity. The survey allowed for data to be gathered from the whole cohort which gave a larger picture of change or non-change directly from the student body itself.

The quantitative analysis analysed students’ Likert scale responses with a 1–5 scale where 1 was the least positive response and 5 the most positive response. Statistical graphs and tables featuring grouped frequency distribution of scales in each class were collated to indicate students’ view of role change (Table 3.3 shows the blank template for data collection). The analysis of these statistics informed the researcher of the student observations of the TPCK dimensions reflected in the research question surveys, allowing for refinement of the student comment qualitative data collection. The results from the quantitative data were also compared to the results from the qualitative data collected from students.

Table 3.3:
Template for Collection of grouped frequency distribution of student survey ratings.

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<th>Collected at the end of the unit</th>
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<th>CLASS B</th>
<th>Blog</th>
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<td>Q.1</td>
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<th>CLASS D</th>
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While the research design allowed for six, weekly student and teacher blogs, because of student work rate, it needed to be modified at teacher discretion to student blogs posted online in the surveys at the beginning and the end of the data collection period. This was also a factor for teachers who were ‘time poor’ and found the six weekly schedule too onerous.

3.4.4. Data Collection for Qualitative Analysis

Qualitative approaches, sometimes labelled naturalistic inquiry or constructivism by Cresswell (2008), stresses the importance of the participant’s view, the setting or context, and ‘highlights the meaning people personally hold about educational issues’ (p.50). Qualitative data are typically collected in interviews, and that is the case with this research. Silverman (2001) points to the usefulness of interviews as providing "insight into the individual’s constructed social worlds in which they convey those constructions in the particular interactional setting of the interview’ (p.290). Freebody (2003) observes that interviewing may need to be reconsidered more as a data generating method rather than data gathering. This declarative statement by Freebody directs the researcher to consider their capability to describe accurately the ways the interview participants and the interviewer make sense in generating meaningful accounts of the experiences they describe and interpret. This caution
delineates the necessity to examine the structure as well as the content of the interview as a construction of the social order that the speakers convey. In particular, for this research project, the researcher had use of open ended questioning and probing questions that sought clarification rather directive questioning in order to permit the interviewee to expand their own meaningful experiences and to ensure the validity of interviewee’s responses.

This study compared and contrasted the findings from both the quantitative and qualitative analysis of the student survey data, and then focused on the findings of the qualitative analysis of both the teacher survey responses and the teacher focus group exit interview. Therefore, the purpose of data collection was to provide an adequate context from which to clarify what the teachers and students were saying about their perceived respective roles and relationships through the use of the chosen frameworks. The purpose of using a selection of quantitative and qualitative data in Phase 1, 2, and 3, both student and teacher blogs and the teacher interviews, was to develop greater depth of understanding of the perceived roles as seen through multiple responses. This enabled thorough triangulation and addressed Creswell’s concerns for authentication of the research. The Phase 2 data collection gave the opportunity to add further depth through the comparison of student and teacher data on the same themes. The amount of data collected using the instrument in survey and interview context also demonstrated Creswell’s (2003) concept of valid transfer of analysis to illuminate the research and Silverman’s (2001) comprehensive data treatment for the purposes of holistic recommendations regarding the topic under discussion. The perceived teacher and student responses should make sense, be meaningful, and enable the researcher to draw valid conclusions from the sample of the population (Creswell, 2003).
Qualitative data collection utilised the dual modes of digital recording using a digital camera (visual mode) and Livescribe Smartpen (audio mode) for the teacher focus group exit interview. Blogs of teacher and student survey responses were posted on the cLc school intranet.

For this study, the qualitative data collection provided a platform for data analysis and utilized the mixed methodology approach to achieve the best from both approaches (Creswell, 2003) as well as a large enough set of information to make the study clear and transparent so that future readers could decide what was applicable to their schooling context.

### 3.5 Methods of Data Analysis

#### 3.5.1 Quantitative Data Analysis

Creswell (2008) indicated that the initial step in analysing quantitative data is to determine how numeric scores should be assigned to the data, assessing the types of scores that should be used, selecting a statistical program that would put the data into a program readable format and subsequently cleaning up the database for analysis. Therefore, each of the categories in the student survey questions were coded as variables and the procedure for data coding organised and detailed in a computer format to enable data entry. This coded data will be entered manually into an EXCEL program utilising the graphing function for Frequency Distributions.

A descriptive statistical analysis of two surveys using the 1–5 scale that each of the 107 students posted on their class forum, including grouped frequency distribution and means was conducted for each category and the overall responses across the two student surveys at the beginning and end of the unit. Compound bar graphs corresponding to each of the two student collection point at the beginning and end of
the poetry unit were used to break down the data. Each compound bar graph was split seven columns to represent the seven research questions at each point of the five point scales on the horizontal axis measuring the combined student use against a 0-45 frequency score on the vertical axis. Percentage Grouped Frequency graphs added further clarity of whole cohort and individual class trends. These graphs demonstrated an overall description of student observations of their learning experiences with the intent of identifying trends. These major trends were detailed using individual frequency graphs. The compound bar graphs illustrated these trends in the data by showing how each component contributes to the data and the individual frequency graphs allowed for the separation of data for in-depth descriptive analysis. A graph of Mean Percentage Distribution of combined classes across the five scales was also used as a validation tool to crossreference the findings from the Grouped Frequency graphs. The Mean Percentage Distribution graph was calculated by finding the mean of the raw score of each of the 1–5 scales and expressing them as a percentage of the whole cohort. The increase or decrease in mean percentage distribution should reflect the findings of the Grouped Frequency graphs (see Appendix 4, Sheet 3).

Students’ online survey responses in relation to themselves individually, their peers and their teacher/student relationship as well as their role in the initial use of technology were analysed using descriptive analysis to provide insights into how students felt about their experiences, their beliefs about their own role in learning and about teachers’ role in teaching.

3.5.2. Qualitative Data Analysis
The various approaches for analysing qualitative data (Creswell, 2003; Freebody, 2003; Gay & Airasian, 2003) suggest the process for data analysis include the analysis of transcripts of interviews and survey comments, reducing texts into initial concepts, grouping initial emerging concepts across the individual analysis and subsequently developing an image of interrelated common concepts. As previously outlined in 3.4.2, given the amount of data collected by the researcher, a content thematic analysis (Silverman, 2001) of the student and teacher survey comments and the teacher focus group exit interviews with the Leximancer software gave the opportunity to explore the emergent themes/concepts that characterised the student/teacher experiences before applying the other theoretical frameworks.

Qualitative analysis of the transcript from the focus group is a three step process which firstly requires the organisation of the data into demarcated segments within it, each segment being labelled with a code term or theme (a short word or phrase) that suggests how the associated data segments inform the research objectives. The second stage follows a more in-depth interpretative code in which specific trends or patterns can be interpreted. Thirdly, when this process is complete, the analyst summarises the prevalence of the code terms by comparing the relationships between them. Leximancer calls the initial code terms in this process ‘concepts’, the in-depth interpretative coding of trends, ‘themes’, and provides an automated analysis based on the statistical properties of a text which is visually displayed in the form of concept maps, network clouds and concept thesauruses (Smith and Humphries, 2006).

Leximancer has the added capacity of merging concepts to create major and minor themes, adding or removing concepts, as well as extracting semantic (meaning) and relational information. In analysing the teacher and student data, as well as being cognizant of the context and conduct of the interviews and surveys, I endeavoured to review information, identify trends, unpack common elements and develop a
collective account of finding (Creswell, 2003). Using the Leximancer software, this involved categorising and coding the information collected by reviewing the data sets then unitizing the categorized data around collective concepts (Gay and Airasian, 2003).

Leximancer initialised content analysis by examining the occurrences and non-occurrences of words in written texts to perform a conceptual analysis (thematic analysis) in that it detected and quantified the words that regularly occur within the text. In this conceptual stage, Leximancer scanned the text to identify frequently used terms (concept seeds).

In its next stage of analysis, Leximancer defined the content analysis indicating whether there is a relationship (semantic analysis) between the concepts and measured the co-occurrence of concepts within the text based on a set length of words or sentences. In the final stage, the results of this analysis were presented visually via a coloured concept map which grouped the concepts into major themes based on proximity i.e. how closely the themes are related to each other was demonstrated visually by placing the themes either close to each other or further away in the concept mapping.

The researcher was then able to analyse the word groupings under concepts and themes and rework the themes into major and minor themes or sub-themes, renaming them according to priority usage or in Leximancer language, connectivity or relevance, e.g. ‘work’ may become ‘classroom work’ and ‘teacher work; ‘helped’ may become ‘peer group help’ or ‘teacher help’ or ‘computer help’.

This qualitative analysis then provided a basis for further analysis using the theoretical frameworks of TPCK (Mishra & Koehler, 2008), Green (1998), Prestridge (2007), Starkey (2011), and Donnelly et al. (2011). The interpretation of the
qualitative data thus clarified or provided meaning to the research topic, demonstrating transferability (Creswell, 2003) leading to findings and recommendations for improvement.

3.6 Ethical Considerations

3.6.1 Target Participation Group:

The Year 9 cohort at my local all boys school was chosen to be participants in this study due to the school’s initiative to move to a 1-1 laptop program, accessibility of my own workplace and my interest in integration of computer technology. The fact that the target group was male was entirely accidental and was not envisioned to create a problem with transferability of the findings as other studies had accepted validity across the gender divide (Lingard et al., 2002; Keddie, 2005; Heemskerk et al., 2009; Lui & Chen, 2013). The availability of my own workplace environment was the only consideration when it came to choosing a target group. Potentially, this choice could have affected the research design both positively and negatively as local knowledge could have led to effective analysis of the topic under investigation or familiarity with the project subjects could have led to skewed results. The implications of the researcher being a participant as well as the project director/researcher in qualitative research are positively and negatively outlined by Burns (2003) with regard to collectable data and analysing viewpoints.

As the designer of the integrated poetry unit, the positive effect of having access to student performance records and familiarity with school resources was that the unit could be directed to the developmental abilities of the student body. In addition, as Head of the English Department, knowledge of teacher strengths as well as school curriculum priorities in regard to the introduction of a 1-1 laptop program, positioned the study to have a positive outcome. As a participant in the project, the researcher
acted as a class teacher responding to the teacher survey, a participant in the teacher group exit interview, and the unit leader delivering the poetry unit in collaboration with the other English teachers. Particular areas of concern could have occurred at the point of data collection in the teacher focus group exit interview with leading questions and inside knowledge of classes and teachers’ emphasises as well as teacher collation of student data being too directive towards better students and less directive to lower achieving students. These concerns were balanced in this research by the use of open-ended questions circulated to the local staff participants as well as professional discussions with participating teachers and my university research supervisors. The professional discussions with collaborating teachers and my research supervisors covering these possible overly positive or negative outcomes led to validation of the emergent themes as well as substantiating the collection of data via the student and teacher surveys.

Furthermore, this consideration of the researcher’s dual role was also relevant for the privacy of the target group of teachers and students (Given, 2008). Teacher and student participation in the project had to be without repercussion to their professional careers at the school in the case of the teachers and without prejudice to their results in the case of the students to guarantee neither inflated or deflated results and observations. To ensure this occurred, teacher privacy was protected by the assigning of fictitious names: Class A teacher, Adam; Class B teacher, Ben; Class C teacher, Charis; and Class D teacher, Dianne (see 3.2.4). Student identity was protected in data collection by assigning a number that aligned with their class teacher: for example, A1-28; B1-31; C1 – 26; and D1-24 (see 3.2.4).

3.6.2. Reporting
Ethical research includes an appropriate mechanism to report results (if only aggregated results) back to the participants. This was done in the form of reports to the school principal and the school e-Tech committee as well as discussions with the IT Department and the Year 9 teachers involved in the project. The research will also involve other reporting, including academic publication.

3.7. Summary

This research explores the perceived reciprocal nature of pedagogy and learning and roles of the teacher/student relationship in an ICT based English unit in a middle school framework, specifically, a Year 9 poetry unit. Investigating contemporary phenomenon within the real life context (Yin, 2003) of 107 students in four English classes with their four teachers of English, the research utilizes survey data from teachers and students via blogs and, in the case of the teachers, a recorded interview at the end of the study. The student data was analysed quantitatively with descriptive statistical analysis using grouped frequency graphs to analyse scaled answers to seven TPCK designed questions and qualitatively using Leximancer software as an instrument to examine their short responses explaining their scaled response. However, both the teachers blogged answers to similar student TPCK questions and their transcript interview were analysed qualitatively utilizing the Leximancer software. From this analysis, findings were analysed using TPCK and various other teacher pedagogical frameworks: Prestridge’s (2007) Teachers’ Pedagogical Framework; Starkey’s (2011) Digital Age Matrix; Ertmer et al.’s (2013) Teacher/Student centred pedagogy; Donnelly et al.’s (2011) Teacher ICT Integration Model; Green’s (1998) 3D model; and Merchant’s (2009) participatory culture pedagogy.
THE CHANGING ROLE OF TEACHERS AND STUDENTS IN AN ICT ENGLISH UNIT

The methodology and research design investigated whether the perceived roles and relationships of middle school students and their teachers change in an integrated computer technological English unit of work. It enquired whether technology integrated learning may give rise to observable engagement in learning while perceivably developing English content skills in the transitional years from Primary to Secondary school. The methodology and research design explored the research question: ‘How might the role and relationship of teachers and students change when using ICTs in an online delivered middle school English curriculum, specifically, a Year 9 poetry unit?’
Chapter 4: Student Data Findings

4.1 Introduction

The findings regarding student data were distilled from analysis of student perceptions garnered from the surveys collected in blog format and this data was analysed in two ways. First, quantitative analysis of the scaled responses collected at both the beginning and the end of the integrated poetry unit was quantified using descriptive statistics compiled in graphs. This was followed by a second qualitative analysis of the open-ended comments in the survey, utilising grounded theory with the help of Leximancer as an ethnological software analysis package. Various ICT integration frameworks were then used to reflect on the data including TPCK and Starkey’s (2011) digital age learning matrix. Green’s 3D model, particularly its L(IT)eracy iteration, which focussed on the interconnectedness of critical, cultural and operational dimensions in students’ literacy learning and technology, and the classroom contexts which support this, was also used to highlight the shifting roles and relationships between teachers and students, brought about by the incorporation of technology.

4.1.1. Participants and Non-participants

While all 107 students participated in the poetry unit, not all students completed surveys at both the beginning and end. In the initial survey, at the start of the unit, 12.1% of the Year 9 cohort were non-participants. 2.8% of these were ESL student who were recent migrants to this country and had limited computer skills. The remaining 9.3% chose not to participate in the survey. In the survey at the end of the
unit, 21.5% of the Year 9 cohort was non-participants. Again, 2.8% of this group were ESL students with limited computer skills. 9.3% were absent through sport or illness and a further 9.3% did not participate for other reasons (Table 4.1).

Table 4.1.

Table of Non-Participants with Breakdown of Reasons for Non-participation.

<table>
<thead>
<tr>
<th>Non-Participants</th>
<th>Beginning</th>
<th>%</th>
<th>End</th>
<th>%</th>
<th>Total Class</th>
</tr>
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<tbody>
<tr>
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<td>5</td>
<td>18.5</td>
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<td>4</td>
<td>12.9</td>
<td>31</td>
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<tr>
<td>Class C</td>
<td>5</td>
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<td>11</td>
<td>45.8</td>
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<td>0</td>
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<tr>
<td>Total</td>
<td>13</td>
<td>12.1</td>
<td>23</td>
<td>21.4</td>
<td>107</td>
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<tr>
<th>Non-Starters</th>
<th>ESL - no computer skills</th>
<th>%</th>
<th>Other reasons</th>
<th>%</th>
<th>Absent</th>
<th>%</th>
<th>Total</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2.8</td>
<td>10</td>
<td>9.3</td>
<td>0</td>
<td>0</td>
<td>13</td>
<td>12.1</td>
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</tbody>
</table>

<table>
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<tr>
<th>Non-Finishers</th>
<th>ESL - no computer skills</th>
<th>%</th>
<th>Other reasons</th>
<th>%</th>
<th>Absent</th>
<th>%</th>
<th>Total</th>
<th>% of Total</th>
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<tr>
<td>3</td>
<td>2.8</td>
<td>10</td>
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<td>10</td>
<td>3</td>
<td>23</td>
<td>21.5</td>
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4.2. Quantitative Analysis and discussion of Student Surveys

4.2.1 Analysis of Student Surveys
This section presents a breakdown of student survey responses for questions 1 - 7, and compares scores at the start of the unit and at the end to discover from student perceptions what is effective in integrating ICTs into the English curriculum. The findings of the quantitative analysis of student perceptions will inform the research question: ‘How might the roles and relationships of teachers and students change when using ICTs in a middle school English curriculum, specifically, a Year 9 poetry unit?’ The findings of the quantitative analysis of questions 1, 2, 3 and 6 and 7 will directly inform the underlying research questions of students’ views on use of technology, their understanding of subject content, and their response to pedagogy in their observations on their learning roles (see section 1.2). The findings of the quantitative analysis of questions 4, 5, 6, 7 will inform the underlying research questions of students’ observations about their attitudes, enjoyment and engagement in integrating ICTs in English.

**Q1. Technology usage:** ‘How well have you worked with technology (where 5 is very well and 1 is very poorly)?’ Comparing scores from the first and second surveys indicated the following patterns:

- a decrease in poor to neutral ability in scales 1-3 in the first survey from 47.4% down to 8.4% in the second survey noting a total decrease in Scales 1 and 2 (inability to work with technology) from the beginning to the end and a decrease in the neutral (not sure) scale 3 from 35.5% to 8.5% which was complemented by;

- a perceived increase in scales 4 and 5 (working well and very well with technology) from a beginning 52.7% at the beginning of the unit up to 91.6% at the end of the work unit with a notable increase in scale 5 (working very well with technology) of 47.6%;
• the group frequency graph (Figure 4.1) shows the notable divergence in scale 5 (working very well with technology) with scale 5 overtaking scale 4 (working well with technology), in the second survey indicating a marked rise of perceived technological student skill with no students indicating difficulty in using technology in scales 1 and 2 by the end of the project.

![Figure 4.1. Group frequency graph Question 1-working with technology.](image)

In summary, students reported a notable rise in their perceived ability to use technology very well with no one in the cohort reporting an inability to use the technology at the end of the unit.

**Q2. Understanding Poetry Content:** ‘Did you understand the poetry content (where 5 is ‘very well’ and 1 is ‘very poorly’)?’ Comparing scores from the first and second surveys indicated the following patterns:

• a decrease in students’ inability to understand poetry content in scales 1–3 from 47.4% in the beginning down to 10.8% at the end with a total decrease in negative scale 1(not able to understand at all) and a decrease in negative scale 2 (not able to understand sometimes) from 15.1% down to 2.4%, with a decrease in the neutral scale 3 (not sure) from 30.1% down to 8.4%
• an increase in ability to understand content in a combined positive scale 4 (working well with poetry content) and 5 (working very well with poetry content) of 51.7% up to 89.2% featuring a notable scale 5 (working very well with poetry content) perceived increase from a beginning 6.5% at the beginning up to 39.8% at the end;

• The group frequency graph (Figure 4.2) illustrates the convergence of the scale points at scale 4, and also shows the notable rise of scale 5 (6.5% up to 39.8%) at the expense mostly of scales 3 (30.1% down to 8.4%) and 2 (15.1% down to 2.4%) indicating a considerable rise in perceived content understanding from the beginning (in red) to the end (in green), particularly with a notable percentage (39.5%) of students perceived understanding the poetry content ‘very well’, shown in scale 5. Scale 4 in the beginning collection may also have contributed to the overall perceived improvement.

![Figure 4.2. Group frequency graph Question 2-understanding poetry content.](image)

In summary, students reported perceived notable increases in understanding the poetry content ‘well’ and ‘very well’ by the end of the unit with a nil result in non-understanding and an observable drop in the neutral rating.
Q3. **Enjoyment of Learning**: ‘Did you enjoy learning (where 5 is ‘very much’ and 1 is ‘very little’)?’ Comparing scores from the first and second surveys indicated the following patterns:

- a decrease in combined negative scales 1 -3 (very little enjoyment, some enjoyment, not sure) from 48.4% down to 12% with a total decrease in scale 1(very little enjoyment), a decrease in scale 2 (some enjoyment) from 12.9% down to 1.3% with a decrease in the neutral scale 3 from 31.2% down to 10.8%;
- an increase in combined scales 4 (much enjoyment) and 5 (very much enjoyment) from 52.7% up to 69.5% featuring a 1% increase in scale 4 and 13.8% in scale 5.

![Figure 4.3. Group frequency graph Question 3-enjoyment in learning.](image)

In summary, the group frequency graph indicates the gradual ascendancy of enjoyment of learning over the lack of enjoyment over the course of the work unit with a substantially minimised reduction of lack of enjoyment.

Q4. **Others hindering/helping in Learning**: ‘Did others help or hinder the learning (where 1 is ‘others hindered a lot’ and 5 is ‘others helped a lot’)?’ Comparing scores from the first and second surveys indicated the following patterns:
• a decrease in combined negative scales 1–3 (others hindered a lot, others hindered somewhat, not sure) from 46.4 down to 32.5% featuring 8.6% for ‘hindering of student learning’ in scales 1 and 2 at the beginning of the poetry unit and a similar minimalistic ‘hindering’ at the end of 8.3% with a 38.7% neutral scale 3 (not sure) at the beginning and 25.3% neutral scale 3 at the conclusion;

• an increase in combined positive scales 4 (others helped) and 5 (others helped a lot) from 52.8 up to 67.5% indicates a large percentage of others ‘helping a lot’ both at the beginning and the end of the poetry unit. Also, there was a consistent scale 4 (others helped) component of 37.6% at the beginning and 38.6% at the end of the poetry unit but a rise from 15.1% in scale 5 (‘helping a lot’) in the beginning to 28.9% at the end of the poetry unit.

Figure 4.4. Group frequency graph Question 4-others hindering/helping learning.

In summary, the group frequency graph indicates that while there were minimalistic reported indications of student learning being hindered by others consistently at the beginning and end of the poetry unit, approximately a third
of the cohort was neutral at the beginning but this decreased to almost a quarter of the cohort by the end, with a notable perceived increase of more than a consistent third of the cohort continually ‘helping others’ and over a quarter of the cohort ‘helping a lot’ by the end of the poetry unit.

**Q5. I helped/hindered in Learning:** ‘Did you help or hinder learning (where 5 is ‘I helped a lot’ and 1 is ‘I hindered a lot’)?’ Comparing scores from the first and second surveys indicated the following patterns:

- a decrease in combined negative scales 1–3 (I hindered a lot, I hindered, not sure) from 66.7% down to 32.5% with a consistent minimal group of students indicating they individually hindered student learning (12.9% at the beginning in scales 1 and 2 but 10.8% at the end), featuring a neutral scale 3 (not sure) decrease from 38.7% down to 25.3% from the beginning to the end of the poetry unit;
- an increase in combined positive scales 4 (I helped) and 5 (I helped a lot) from 33.3% up to 49% featuring increase in scale 4 from 25.85% up to 30.15% and scale 5 from 7.5% up to 28.9% indicating a very positive increase of students individually indicating they either ‘helped learning’ or ‘helped a lot’, approximately 60% of the Year 9 cohort.
**Figure 4.5.** Group frequency graph Question 5 – I hindered/helped learning.

In Summary, the group frequency graph draws attention to a minimal amount of ‘hindered’ of student learning during the poetry unit and highlights the positive contribution of individual students ‘helping’ and ‘helping a lot’ with student learning.

**Q6. Did my Learning Change?** ‘Has there been a change in your learning (where 5 is ‘changed a lot’ and 1 is ‘changed very little’)?’ Comparing scores from the first and second surveys indicated the following patterns:

- a decrease in combined negative scale 1–3 (changed very little, changed a bit, not sure) from 29.1% down to 4.8% with a total decrease in scale 1 (changed very little), and a decrease in scale 2 (changed a bit) from 6.5% down to 1.2%, and featuring a decrease in neutral scale 3 (not sure) from 16.1% down to 3.6%;
- an increase in combined scales 4/5 (changed and changed a lot) from 71% up to 95.2% featuring a scale 5 (changed a lot) increase from 19.4% up to 74.7% contributing to the decrease in scale 4 (changed) response from 51.6% down to
20.5%. Overall, these percentages indicate a very notable change in students’ perception of their own learning.

![Figure 4.6](image.png)

*Figure 4.6. Group frequency graph Question 6-did my learning change?*

In summary, the group frequency graph illustrates an accelerated rise in perceived student learning which indicates not only the notable response to changed student learning directly from the beginning of the poetry unit but also emphasises the marked growth in student perception of their learning at the conclusion of the poetry unit.

**Q7. Learning Change for better or Worse:** ‘Have the changes been for the better or the worse (where 5 means ‘for the better’ and 1 means ‘for the worse’)?’

Comparing scores from the first and second surveys indicated the following patterns:

- a decrease in combined negative scales 1 – 3 (for the worse to not sure) from 22.6% down to 1.2% with a total reduction in scales 1 and 2 (change for the worse) featuring a neutral scale 3 (not sure) reduction from 14% down to 1.2%
• an increase in combined scales 4/5 (change for the better) from 77.4% down to 98.8% featuring a positive scale 5 response from 25.8% up to 81.95 contributing to a decrease in scale 4 from 51.6% down to 16.9%. Overall, this indicates a change in learning for the better.

![QUESTION 7 PERCENTAGE DISTRIBUTION](image)

*Figure 4.7. Group frequency graph Question 7- learning change for better/worse.*

In summary, the group frequency graph indicates a perceived positive change in student learning for the better while indicating a total nil response within the respondent student cohort for any negative differentiation to technology integration in leaning poetry content.

The indicators contained in the graph of mean percentage distribution of the combined classes across the five scales (Figure 4.8) reinforce student competency. These values were calculated by finding the mean of the raw scores for each validated scale and expressing these means as a percentage of the whole cohort. These percentages (attached as Appendix 4, Sheet 3) serve to measure the observable
increases or decreases in each scale to cross reference to the Group Frequency
Graphs as a comparative tool for validation of the findings in these graphs (see 3.5.1).
The figures demonstrate that while student responses in scales 1 (very poor
performance) and 2 (poor performance) decrease (12.7% of the cohort at the
beginning and 4.3% at the end of the poetry unit)), and the neutral scale 3 decrease
by 20.2%, there are also positive trends in scale 4 (much improved/changed) and
scale 5 (very much improved/changed) which demonstrate an almost 30%
 improvement in competency by the end of the unit.

Figure 4.8. Graph of Mean percentage distribution of combined classes across
the five scales.

Results from the raw score distribution graph combines classes all five scales for all
classes (Figure 4.9) and also compares results at the beginning and end of the
project. This data indicate that:

• in response to the survey questions in all areas, the ‘very poor’ and ‘poor’
  results were either totally or almost minimised between the first and second
  survey;
yet again in all areas there were quite notable perceived decreases in the neutral or indecision response with a total nil response in the areas of technology usage and content understanding;

all classes recorded perceived positive changes with the positive and extremely positive responses notably in the areas of technology usage, content understanding, learning role and changes for the better, with Class D showing notable changes and Class C registering marked change but not as notable as the other classes.

These changes are visually reinforced by the group class frequency graphs (Figure 4.10 and 4.11) for each question which show:

- in Question 6 (learning role change), that as a whole the Year 9 cohort recorded changes in their perceived learning role, which the Question 7 results emphasise as being for the better. This is also demonstrated by a perceived change in Question 1 (technology usage) and notable change in Question 2
(content understanding).

**Figure 4.10.** Group class frequency graph—How did I work with technology?

**Figure 4.11.** Group class frequency graph—How did I work with the poetry content?
in Questions 3 and 4 (peer group collegiality) (Figures 4.14 and 4.15), students indicated they received notable levels of technological and content help from other students (52.7% to 68.5%) as the project proceeded while the percentage of individuals volunteering help to others also increased (33.3% down to 59%). However, as the later percentage of students volunteering to help was smaller than the previous one, it would indicate that there was an expanding core group of individual students up to 59% of the cohort, helping others by the end of the project, indicating a unique collegiate endeavour.
4.2.2. Discussion of Student Survey Results

By the end of the project, the perceived number of students working well or very well with technology increased from 52.7% to 91.6% which also included a notable perceived increase of 47.6% working very well with technology. This explains the perceived decrease in working poorly at the beginning from 11.8% to 0% by the end as well as the decrease in the neutral response from 35.5% to 8.45%. By the end of the project, student responses indicated a marked rise in technological skill with no students indicating any difficulty working with technology. This analysis highlights the high degree of perceived student technological competency developed by the end of the project. The number of students understanding the content ‘well’ also increased by the end of the project from 51.7% to 89.2% which included a notable perceived increase from 6.5% to 39.8% of students understanding content ‘very well’. This explained the perceived decrease in ‘poor’ and ‘neutral’ understanding which was 47.4% at the beginning and 10.8% at the end of the unit, as well as the perceived decrease in the neutral response from 30.1% to 8.4% which included a total perceived
decrease in ‘very poor’ understanding and a perceived decrease in ‘poor’ understanding from 15.1% to 2.45% by the end of the project. This analysis points to a notable rise in perceived content understanding from the student perspective.

By the end of the project, students who reported enjoying learning ‘well’ increased from 52.7% to 69.5% which included a notable increase of 13.8% of students enjoying learning ‘very well’. This explains the observed decrease in ‘poor’ and ‘neutral understanding at the beginning from 48.4% to 12% as well as the decrease in the neutral response from 31.2% to 10.8% which included a total decrease in ‘very poor’ understanding and a decrease in ‘poor’ understanding from 12.9% to 1.25% by the end of the project. This result indicates the perceived gradual ascendancy of enjoyment of learning over the lack of enjoyment over the course of the project with a perceived substantially minimised reduction of lack of enjoyment. The findings also indicate that while there were perceived minimalistic indications of student learning being hindered by others at the beginning (8.6%) and end (7.2%) of the project, approximately a third of the cohort was neutral at the beginning but this reduced to almost a quarter of the cohort by the end, with a notable perceived increase of more than a consistent third of the cohort continually ‘helping others’ and over a quarter of the cohort ‘helping a lot’ by the end of the poetry unit, a combined 66.5% of the cohort. The results draw attention to the perceived minimal ‘hindering’ of student learning through the project with a perceived decrease in ‘hindering’ of learning from 66.7% to 32.5% and highlights the perceived positive contribution of individual students ‘helping’ (25.8% to 30.1%) and ‘helping a lot’ (7.5% to 28.9%) over the course of the project with neutral positioning decreasing from 53.8% to 30.1%.
By the end of the project, students indicating that their perceived learning had changed increased from 71% to 95.2% which included a notable increase from 19.4% to 74.7% for student learning ‘chang(ing) a lot’, contributing to the decrease in the learning ‘changed’ response from 51.6% to 20.5% as well as the total decrease in ‘changed very little’, and the decrease in ‘changed a little’ and neutral responses from 29.1% to 4.8%. This illustrates the perceived rate of change in student learning from the beginning to the end of the study emphasising in particular the change in student neutrality by the conclusion of the project. With a decrease in negative and neutral responses from 22.6% to 1.2 % over the course of the project, combined with positive increased response from 25.8% to 81.95%, this finding illustrates the change in favour of a perceived positive change in student learning. It also indicates a total nil response within the respondent student cohort of any negative differentiation to technology integration in learning content.

In terms of improved student response, all classes recorded accelerated positive changes in the areas of technology usage, content understanding, learning role and changes for the better, with Class D showing the biggest changes and Class C registering marked change but not as notable as the other classes. All classes (except Class C) showed decreased ratings in the neutral and moderately positive responses which, when considering the increase in the ‘changed a lot’ responses, could explain the drain from the neutral to very positive changed responses. All the classes recorded very notable decreases in the neutral rating in all areas with the most notable being Class A recoding a nil rating in areas of technology usage and content understanding indicating a perceived higher degree of competency in the use of technology and also in understanding poetry content. Class D recorded a nil rating in technology usage and change in learning role indicative of perceived increased technological competency and competency in their learning ability.
The findings from the quantitative analysis clearly showed that while all classes at the beginning recorded ‘very poor/very little’ ratings in most areas, by the end of the project, all classes recorded a nil rating for very poor/poor/very much or very little responses for technology usage, content understanding, enjoyment of learning, change in learning role, these changes being for the worse, indicating the ability of students to work well in all areas being researched. Only Class A recorded an ‘a lot’ response in the ‘Others hindered’ and ‘I hindered’ the work while other classes recorded that there was no hindering by others or themselves by the end of the project. Classes B, C, and D registered nil ratings at the end of the project in ‘very poor’ performance in all areas.

4.3. Qualitative Analysis and Discussion of Student Surveys

4.3.1 Analysis of Student Surveys

Following the concept editing outlined in the methodology section (3.6.2 Qualitative Data Analysis), the Leximancer software program was used to examine the free text data for occurrences and non-occurrences of frequently used terms. This conceptual analysis identified 39 associated concepts or main topics in the data as shown in Figure 4.16. The proximity (how close together they appear in the map) of two concepts (or topics) in the concept map indicates how often they appear in similar conceptual contexts in the student surveys. The closer they are to each the more conceptually they are related to each other. The further away the concepts are from each other the less related they are conceptually. In the concept map, the concepts appear as black labels. The relationships between the groups of concepts to one another are illustrated in Figure 4.16 with concepts visibly clustered around their relevant, but as yet, unnamed themes (the coloured circles). Figure 4.16 also shows
how the 39 identified concepts are clustered together, and the related concepts that most frequently occurred in connection with each other.

*Figure 4.16. Leximancer mapping of most frequently occurring student concepts.*

In the next stage of analysis, the 38 concepts were combined to obtain the most commonly occurring themes. Using content analysis, Leximancer was able to identify the relationship between the 38 concepts by measuring the interrelatedness of the concepts. This was accomplished by recognising the frequency of concepts occurring together (called co-occurrence in Leximancer language) within the student surveys. This co-occurrence was identified as a main theme when expressed in a set length of two sentences. This process identified 11 themes associated with these co-occurrences. Figure 4.17 presents the 11 visible themes as the coloured circles around clusters of concepts. These 11 themes were separated and named to emphasise the
clustering of connected concepts. The cluster of the conceptually related concepts of ‘work’, ‘better’, ‘learning’, ‘computer’, ‘computers’, ‘changes’, ‘working’, ‘easier’, and ‘use’ were grouped in the theme ‘work’. This group of words (word groupings in Leximancer language) was labelled as ‘work’. The themes were also heat-mapped to indicate the importance according to the colour wheel. This means that the hot colours (red and orange) denote the most important themes, and cool colours (blue and green) denote the least important themes.

![Concept map of 11 major themes showing network of concepts and interconnection to other themes.](image)

**Figure 4.17.** Concept map of 11 major themes showing network of concepts and interconnection to other themes.

The words grouped together were analysed into 11 themes and subsequently, these concepts and themes were reworked into five major and minor themes or sub-themes. This was accomplished by enlarging the major themes to encompass the minor themes, renaming them according to priority usage in the research data or in Leximancer language, their connectivity (degree of connectedness) or relevance to each other. This priority usage or connectivity was important as it defines how the
concepts have been frequently occurring together in the context of the student surveys. This gives relevance to the linguistic usage by providing an interconnectedness (or relevance) of meaning to the concepts and consequently to their associated themes. Figure 4.18 shows these five major themes as ‘work’, ‘learning’, ‘poetry’, ‘technology’, and ‘brother’, sorted according to their most frequent occurrence in the data. Table 4.2 details the regrouped relevant concepts according to their connected (relevant) themes after the major themes accepted the minor themes in their categories based on their associated concepts.

Figure 4.18. Concept Map reduced to major themes.
Table 4.2.

*Student Thematic Summary with associated concepts.*

<table>
<thead>
<tr>
<th>Theme</th>
<th>CONNECTIVITY</th>
<th>Associated Concept in order of connectivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work</td>
<td>100%</td>
<td>Work, better, learning, computer, computers, changes, working, easier, use</td>
</tr>
<tr>
<td>Learning</td>
<td>77%</td>
<td>Learning, working, computers, enjoyed</td>
</tr>
<tr>
<td>Poetry</td>
<td>68%</td>
<td>Poetry, easy, understand, poems, questions, poem, enjoyable</td>
</tr>
<tr>
<td>Technology</td>
<td>51%</td>
<td>Technology, worked, understood, week</td>
</tr>
<tr>
<td>Brothers</td>
<td>48%</td>
<td>Brothers, people, lass, things, fun, understand, learn</td>
</tr>
</tbody>
</table>

The thematic summary shows that the major themes that contribute to student roles in the classroom according to the heated map relevancies and connectivity are ‘work’ (red), ‘learning’ (aqua), ‘poetry’ (olive green), ‘technology’ (light-green), and ‘brothers’ (purple), while the other more minor themes (or less frequently occurring themes) of ‘hardest’, ‘enjoyable’, ‘didn’t’, ‘hindered’ are subsumed into their relevant connected concept.

Based on the count, relevance and connectivity, the most important theme was ‘work’. Further examination in the high detail level function of Leximancer, which showed in detail the shared concepts and word groupings that connected one theme to another theme, showed that the theme ‘work’ was strongly association with other identified concepts such as ‘work’, ‘better’, ‘learning’, ‘computer’, ‘computers’, ‘changes’, ‘working’, ‘easier’, ‘use’ (Table 4.2). An exploration of the concept ‘work’ using a query search in Leximancer showed all the comments participants made on the theme ‘work’ in the surveys in class (e.g. *I am definitely improving with the*
tasks now. The work was enjoyable, but after comprehensive work on this it gets a little bit boring’), as well as working from home (e.g. ‘I needed to catch up on work at home and it was easy to access. I found the work easy to understand.’). This was important as it highlighted the connection between the students’ working both at school and at home via the agency of technology, thus emphasising the extension of the student learning role in their digital culture.

While Leximancer was used to analyse the raw student survey data from grounded theory, it was not surprising to find that the TPCK categories (themes of ‘technology’, ‘learning/pedagogy’, ‘poetry/content’) with the added categories of collegiality and role changes emerged as relevant emphases in the student survey responses from the major theme of ‘work’ as shown in Appendix 1. While these examples of student response in Appendix 1 are only samples and not exhaustive, they are indicative of the positive response of students to technology integration in a poetry unit and are consistent with the Leximancer analysis showing the high degree of connectivity between the concepts in relation to the themes. Contrary response gathered from the student surveys mainly centred on the themes of ‘hardest’, ‘didn’t’, and ‘hindered’. A small percentage referred to technology or poetry content, in the greatest part, see Table 4.3.
Con contrary student response from themes

<table>
<thead>
<tr>
<th>Theme</th>
<th>Connectivity</th>
<th>Summary of comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>hardest</td>
<td>21%</td>
<td>Finding information, poems, definitions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Deciding the layout, getting all the stuff together</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Doing the analysis, understanding the questions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Posting poems in the forum</td>
</tr>
<tr>
<td>Didn’t</td>
<td>16%</td>
<td>not helping or hindering others,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>not being a brother so didn’t help,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>not understanding but got help:</td>
</tr>
<tr>
<td>hindered</td>
<td>03%</td>
<td>I neither helper or hindered, no one helped or hindered</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I hindered at first but improved</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Some people/kids beside me hindered</td>
</tr>
</tbody>
</table>

4.3.2. Discussion of Student Survey Qualitative Results

The Leximancer qualitative analysis of student survey data centered on the concept of ‘work’ which was found to be the largest theme, as indicated in red in Figure 4.13 which is closely aligned to core concepts of ‘better’, ‘learning’, ‘computer’, ‘computers’, ‘changes’, ‘working’, ‘easier’, and ‘use’. This close correlation of word concepts indicated that students reported that working with the poetry content on computers was easier and that the integrated technology approach afforded observable change in their normal learning style which was for ‘the better’. This change for ‘the better’ was reinforced when the subsidiary themes (with their
associated concepts shown in Table 4.2) of ‘learning’ (learning, working, computers, enjoyed), ‘poetry’ (easy, understand, poems, questions, poem, enjoyable), ‘technology’ (technology, worked, understood, week) and ‘brothers’ (brothers, people, learn, things, fun, understand) were combined with the ‘work’ theme. This indicated the working relationship that obviously existed in the qualitative analysis of the data between the concepts of student learning, subject content and technology. What becomes evident from the qualitative analysis is that the students valued (e.g. *I think the skills I am learning today will help in the future*) and enjoyed (e.g. *the poetry lessons we have had in the computer room have been fun*) their ability to use integrated technology in the poetry unit. This suggested that when students were confident in using the technology they were able to assume active learning roles even when difficult poetry exercises were demanded of them.

An accompanying question for this content analysis concerned the change in learning that took place in the course of the unit. With the high connectivity/relevance between the concepts of ‘better’ and ‘learning’ within the ‘work’ theme as illustrated in Table 4.2, the qualitative analysis shows conclusively that student learning change has taken place. This change was characterized by such student comments as:

*I was independent this week so I did not help or hinder others. Most of all in being independent and able to work at my own pace especially from home- Change for better as I am learning English better;*

and, *I noticed learning changes this week cause we all contributed and they (the changes) are good as I am doing better at English*. 
However, while some acknowledged change, others remained unconvinced about the subject content:

_They (the changes) are good because they have helped my learning about poetry. I didn’t used to work very well because I was always avoiding the work. I dislike poetry, I think it’s stupid but I enjoy learning but just not poetry._

Student responses also indicated that changes in learning were characterised by an increased sense of independence, an acknowledged sense of advancement in understanding of content, and an ability to transfer knowledge to other students.

Integral to this perceived change in learning and a focal point in the qualitative analysis was the theme of ‘brothers’ which Leximancer analysed as having high connectivity to other concepts and themes and therefore was relevant to all concepts across the data, indicating the relational nature of learning for the boys in this Year 9 cohort. The term ‘brothers’ referred to an emergent group of technology competent students in Year 9 who assisted teachers and other students with technology in the classroom learning activities. While these students had already acquired computer skills through home and school computer use, they also attended training sessions in lunch times and willingly assisted students in their own class as well as teachers and students in other classes on a voluntary basis as required. The concept ‘helped’ featured the repetitive concept of ‘the brothers’ group (students who were technologically skilled e.g. ‘the Brothers group helped a lot of people’) who assisted other students in overcoming difficulties firstly, with technology, and, by extension, with the poetry content:
as a brother I was helping other people a lot throughout the lessons, I helped many people throughout the week with all aspects of their work from using cLc and Prezi to their writing tasks’ and ‘the brothers helped us with the research of the poems.

The ‘brothers’ theme also highlighted this student role as a developmental one throughout the project as students across the cohort (‘the Brothers group only needed to help a few people because everyone is starting to get used to the cLc program’) became more conversant with the technology and the poetry content and thus increasingly confident to share their knowledge spontaneously:

people around me helped me when I was unsure of exactly what to do and other people helped enough for me to understand what I needed to do and I help others enough for them to get the activities done and I needed some help with some stuff but people in my group helped me.+ every week it changes with new tasks to do.

As the most frequent concept across the data, there is an obvious identifiable connection between the ‘brothers’ theme and the relational nature of learning in this data.

Of note in Table 4.3 is the limited theme of ‘hindered’ which occupied a percentage of the overall comments as a concept but only rated minimal connectivity or relevance to the overall themes in the data. This indicates that while there was recognition of disruption by the students, it was not a dominant theme in their experiences. ‘Hindered’ could refer to a number of options: a neutral student role in the classroom, asking for help or not understanding parts of the content or relationships in group work. Typical comments included acknowledgement of hindering (‘the people around me helped me to work fairly well but there were a few times where
they were disruptive’) but this came with a mixture of helping and hindering. This is reflective of the peer socialisation factor prominent in this study (see ‘hindering’ in the student survey comments in Appendix 1), something that was perhaps more productive to student learning outcomes while at the same time being disruptive to teacher behavioural expectations as expressed in the student comments:

I did hinder some people sometimes and I helped Luke do his blog entry and helped people find things,’ and, ‘The other boys hindered me a lot–this was because they all wanted me to help them... I did (help) some but got my work done later.

While student comments repeatedly mentioned the role of other students, it was notable that comments regarding teacher input, although positive, were minimal. With only 14 hits in the entire student data base, comprising minimal concept connectivity/relevance to the student data, the analysis would seem to indicate the decreasing role of the teacher in this online delivered poetry unit as a visible entity in the learning process. The underlying agent that appears to provide the catalyst for these changes is the use of technology which Leximancer analyses and indicates with a high degree of connectivity or as a relevant concept across the themes. The analysis highlights the perceived importance of the role that technology integration plays in student learning and engagement as well as the understanding of subject content.

4.4. Comparison of Student Data Analysis with Theoretical Frameworks

4.4.1 TPCK Framework

The findings from both the quantitative and qualitative analysis revealed that students perceived that they were becoming competent in technological knowledge (TK): ‘I am now working better with technology. I can get work done faster with knowing how to use this program better’, subject content knowledge (CK): ‘I have
learnt a far bit about metaphors and poetry this week. The changes are good because I have learnt more about my work in English and I feel this is good’ and learning knowledge (PK):

I have had to work harder and learn to concentrate; overall it has been better once I got the programs going. I think I worked average because I was a bit unsure of what to do when I missed Monday’s lesson. I think I worked well on the worksheets and what I did in the two lessons.

This perceived competency in technology and content knowledge (TCK) was evident by the end of the poetry unit as implied in this student observation collected at the conclusion of the project:

I found it much easier to do my poetry and English work much easier with the technology. It is much easier than the olden day writing, and it is much easier to know what to do when you have been working on the computer long enough.

The findings of the quantitative analysis in 4.2.2 Discussion of Student Survey Analysis indicated that, ‘all classes recorded the most notable perceived positive changes in the areas of technology usage, content understanding, learning role and changes for the better’ with some classes showing marked positive changes. The findings of the qualitative analysis in 4.3.2 Discussion of Student Survey Qualitative Results again demonstrated the findings of Koehler & Mishra (2008) concerning the perceived ‘dynamic transactional relationship between all three components’ (p.134) through the interrelatedness (‘high connectivity’ in Leximancer terms) of the themes of ‘work’, ‘learning’, ‘technology’, ‘poetry’, (TPCK) and ‘brothers’. Appendix 1 provides examples of the students’ survey observations grouped according to the TPCK categories. However, the quantitative and qualitative analysis as well as the
student comments showed this interrelatedness was a developmental process that took place over the duration of the poetry unit and that it was dependent on the integration of computer technology as a student observed:

> It is quite easy for me to learn because I have grown up on computers most of my childhood. It’s better because it’s fun to work on the computers and to help people achieve the results they’re looking for and the results I am as well.

The findings of the analysis of the student data clearly suggest the effect of teachers’ TPCK application on students in terms of students’ perceptions of learning as outlined by Angeli & Valanides (2009), and Saad, Barbar, & Abourjeile (2013) in the production of knowledge (see 2.4 Constructing Technology Integration Models, p.45). Students commented:

> I have never done much on a computer only for school and I have gotten quicker at typing which I have all ways wanted to do. I think it was a good thing cause now I know how to find more stuff on computers and learn better. I am having no trouble today with technology and I have understood everything in poetry that has been thrown at me; and It is better -the computer is easier to use with English. It is much easier using the computer and the programs. I am doing much better in knowing how to learn to do a poem, using the computer for work and doing the poems.

This data provide a transformation view of TPCK from the student viewpoint and empirically elaborates the role of students in the reciprocal relationship of teaching and learning as a transactional relationship through the integration of technology
knowledge with subject and learning/pedagogical knowledge. The application of the TPCK framework to the student data in this research has elucidated the student voice as the students’ perceptions were that they had become not just consumers of knowledge but producers of knowledge (Merchant, 2008) in a participatory culture (Jenkins et al., 2006)

4.4.2. Starkey’s Framework

The findings from the analysis of the perceived student data were informed by Starkey’s (2011) digital age learning matrix as it identified the ways children learn when using technology by ‘acknowledging the learning or knowledge that occurs between learners in a connected world’ (p. 25). Starkey (2011) suggested that student roles change from being doers to being creators of knowledge. The results from the student data analysis have indicated a cultural dimension to the unique role that the transference of knowledge between peer group learners plays. This was evidenced by student comments on the role played by ‘the brothers’ group in peer group tutoring with technological and content knowledge. Starkey (2011) highlights the learning process that occurs between learners using technology by describing it as the change from looking up information on the internet to comparing and sharing ideas with another person. He further describes this change as engaging with big ideas to exploring the limitations and potential of ideas to developing an original product to sharing ideas of connectedness, critique and creativity with feedback to others.

Students were required to collect information using the internet to compete measureable tasks, reflecting Starkey’s ‘doing’ function:
I am in the middle of my 3 homemade poems and I am flying with technology, I don’t know what’s going on but weirdly I am loving English using the internet Wow, never thought I would say that.

Students’ comments implied that they were thinking about connections within the context of intended learning:

Adding my poetry blogs was easy and finding my poems was hard but I found a site that had some good poems [on the themes in the task]. It was fun creating animations to show their meaning and they looked pretty cool but I didn’t have enough time to make them look really good. Well I know how to convert flash files into AVI files and be able to make them compatible with Movie Maker to say what I want from the poems.

There were also indications that students were thinking about concepts and developing conceptual concepts of the big ideas:

I worked well with the Movie Maker and YouTube Downloader although at first I wasn’t too familiar with them. It was good to make a movie about how our chosen poem was to be seen as a reader [would].

Critiquing and evaluating (exploring the limitations and potential of information, sources or a process) also occurred as commented by a student:

Brilliant! The chance to browse the site at a click of a button! The only downfall is that the only way to contact someone is via comments and e-
mail. There should be a chat section for one to share ideas and meanings with others.

Evidence of creating knowledge to show creativity in applying ideas, processes and experiences to a new reality was intimated in student comments:

*I believe I worked very well to show what I knew with my poems with all the new technology we used for this assignment. This included video cameras, microphones and windows Movie Maker. At the start of the assignment we had trouble with the video formats but this was soon resolved and we had no trouble for the rest of the assignment explaining what the group was learning.*

Sharing the new knowledge in an authentic context to gain feedback to measure value was also suggested in the student experience when a student commented that:

*The thing that I have found to be good for me is reading the poems and doing the questions on the computer, the thing that I have liked is learning how to do blogs and stuff on my homepage and read what others have to say about my poems if there good or not.*

However, the limitation in the technology previously expressed, ‘*The only down fall is that the only way to contact someone is via comments and e-mail,*’ was a reflection on the social media culture of the students that had outpaced the current school capability. Nevertheless, students indicated in their comments that they had made active use of the internet to find poems and definitions of poetry devices, with
technologically enabled modes of production including power points and ‘prezies’ to present to group members, blogging analysis of poems in forums for discussion, and creating original poetry and presenting it through ‘Moviemaker’ and ‘iMovie’ with visual representations and auditory commentary (see Appendix 3 – The Year 9 Online Poetry Unit and student comments in Appendix 1). The digital age learning matrix enabled the alignment of teaching activities to aspects of learning within the poetry context which recognized digital learning frameworks and identified student roles in the production of knowledge. It also provided an evaluative tool that recognized knowledge creation, teaching and learning in the digital age and from doing to creating and sharing knowledge (Starkey, 2011, p.34). The quantitative and qualitative results found in the student data analysis described in previous sections support this conclusion.

4.4.3 Green’s 3D Model

While the TPCK model in this study has benefited from the transformational aspects of ICT – TAPCK and TPCK –XL (Saad, Barbar, & Abourjeili, 2013) by the inclusion of learner knowledge and context knowledge, the application of Green’s 3D model (1998) emphasises the reciprocal and interrelated nature of the cultural and critical dimensions of l(IT)eracy with the operational dimension. The L(It)eracy extension of this model focuses explicitly on interwoven links between literacy and technology (Durrant & Green, 2000), and, according to Green & Beavis (2012) springs from ‘a holistically, socially situated view of literacy, bringing together language, meaning and context’ (p.3 ). It traces cohesion and synthesis in the production, communication, interpretation of and engagement with knowledge and the influence of culture and history in these interrelated processes (Green & Beavis, 2012).

Applying the lens of Green’s 3D model to students’ comments foregrounded shifts in
power relations in the classroom as teacher/student and student/student roles change (the critical dimension); how technology integration contributed to role changes (the operational dimension); and what the main factors were that gave meaning to the student role change in this part of the analysis (the cultural dimension).

In the critical dimension, there was a critical power shift in the classroom relationship from the traditional empowerment of teacher transference of knowledge to the student to a student-to-student and student-to-teacher knowledge transfer. The findings from the quantitative analysis acknowledged a unique collegiate endeavour by an expanding core group of individuals (68.5% of the cohort) helping each other by the end of the project. This was exemplified by the observably positive contribution of the ‘brothers’ group (students with technological skills) who helped other students with technology and poetry content as well teachers with technology content. The findings from the qualitative analysis through the Leximancer themes emphasised ‘helping’ and ‘brothers’ with student comments repeatedly mentioning the role of other students while the role of the teacher was minimalised; this indicated a perceived shift in the power relationships in the classroom. The perceived decreasing role of the teacher in this online delivered technology integrated poetry unit was a notable entity in the learning process. The high frequency of student comments (see Appendix 1–Cooperative Learning) on the reported value of help from other students indicates a peer group power relationship shift from the tradition view of the teacher/student relationship. In addition, the findings of the Leximancer analysis revealed a high connectivity between the concepts of ‘better’ and ‘learning’ within the ‘work’ theme indicating that a perceived change had taken place in student learning characterised by an increase in a reported sense of independence, a student
acknowledgement of perceived advanced understanding of content, and an acknowledged ability to transfer knowledge to other students.

The operational dimension (Green’s focus on ‘production’ using the technical aspects of language and/or technology), highlighted that the integrated technology approach was the catalyst that initiated changes in both the relational power dynamic of student relationships in the classroom and in student learning changes. The Leximancer analysis revealed the major theme of ‘work’ aligned with the core concepts of ‘better’, ‘learning’, ‘computer’, ‘computers’, ‘changes’, ‘working’, ‘easier’, and ‘use’, indicating that the students found working on the poetry content using computers easier and the integration of technology made the production of poems and their analysis ‘easier on the computers’ and helped with ‘understanding English’ (see student comments Appendix 1–Technology and Poetry Content) and changed their normal learning experience ‘for the better’. This was supported by the quantitative data that highlighted the notable rise in perceived student technology capability throughout the project which was connected to a notable rise in perceived understanding of poetry content. Using digital literacies, students produced ‘prezies’ of language devices, digital movies of original poems, power points of analysis using visual and written texts to explain language devices, and used blogs and discussion forums to share analysis and understanding of poetry devices and poems. Production is an important function of participatory culture with the use of Green’s & Beavis’ (2012) ‘affordances of digital media culture and the increasing variables of the means of production’ (p. 8), an important component of Greens’ 3D model in its L(IT)eracy adaptation, as outlined in 4.4.3.

Green & Beavis (2012) state that the cultural dimension has ‘strategic priority over the operational and the cultural as it focuses on the meaning (-making) in the
discourse community’ (p.4). The key quotations likely to make the cultural dimension visible in the data analysis were in response to the question asked: ‘what were the main factors that gave meaning to the student roles that provided the context for role change?’ The main factors that emerged from the student data analysis were enjoyment of learning, learning, and fun.

The findings of the student data analysis indicated that the integration of technology led to a notable increase in perceived student enjoyment of learning with the findings of the quantitative analysis showing almost 88% of the cohort reported enjoying learning by the end of the poetry unit. The findings of the qualitative analysis with Leximancer revealed ‘learning’ as the second major theme (see Table 4.2) which connected with concepts of ‘learning’, ‘working’, ‘computers’, and ‘enjoyed’. The high frequency of these words occurring together (see Table 4.2) indicated that students enjoyed learning by working on computers (‘It’s fun to work on the computers ... and help people achieve the results they are looking for’; see student comments in Appendix 1-Learning, Cooperative Learning and Changes in Learning).

The emphasis on perceived learning and enjoyment, and fun was supported by a unique cooperative learning environment earmarked by a relational aspect that was engendered by ‘the brothers’ group but which spread significantly throughout the cohort emanating initially from peer technology support but encompassing poetry content as well. These participatory practices (Merchant, 2009) of media usage and digital technologies created a social participation through a sense of connectedness between students and students as they became producers and consumers in the learning process. Merchant (2009) also describes the ‘buddy’ (p.114) aspect of participatory learning as a significant ‘fund of knowledge’ (p.114). In this study, this aspect of participatory culture provided significant impetus for the students to
become active in the new mediascape in an online environment in which knowledge and learning were distributed. The findings have revealed a notable perceived swing to student-centred learning and the technology integration and the participatory culture enabled perceived increase in student engagement and achievement (Merchant, 2009).

4.5. Summary of Findings of Changes in Student Roles

The findings from the quantitative and qualitative analysis of the student observations and the application of the theoretical lenses (TPCK, Starkey’s Digital Age Learning Matrix, and Green’s 3D Model) combine to demonstrate that the ability to replicate experiences of participatory culture and participatory practices regarding media usage and digital literacies outside school, aids perceived student engagement in the classroom. The findings based on the analysis of student perceptions highlight the social participation achieved through a sense of connectedness that the students experience in becoming both consumers and producers of knowledge. In this new and emergent mediascape, the findings from the quantitative and qualitative results have suggested that students in the Year 9 cohort participating in the online delivered integrated technology poetry unit reported that they became more transformational (Gerstein, 2012) and independent learners. Students perceived a move from being passive to active learners (Kist, 2012; Carrington, 2009), taking control of their learning experiences; and effective owners of learning through the use of digital literacies (Kajder, 2004; Beavis, 2009; Turner, 2011). The ‘brothers’ group work demonstrated that students were craftsmen (experts) and apprentices (learners), as well as producers and consumers of knowledge in the learning process (Merchant, 2009). Furthermore, the peer group socialisation which resulted when the Year 9 students engaged in the integrated
poetry unit enabled them to work as participants in learning and networkers in the classroom (Jenkins, et al., 2006). Students also demonstrated they were collaborative learners’ (Mishra & Koehler, 2008) and doers and creators of knowledge (Starkey, 2011).

Whatever theoretical perspective is used, undoubtedly, the perceived relationship between teacher and student changed in this study through the integration of technology, with the student voice affirming perceived student technological competency to productively participate in a technology integrated poetry unit. The findings also highlighted the students’ perceived engagement in learning, the observed value of peer group learning, and the reported sense of independence and enjoyment that technology brought to students in English, and perhaps, in the view of Turner (2011), prepared them as ‘the new capitalists in a global community’ (p.614).
Chapter 5: Teacher Data Findings

5.1 Introduction

The findings regarding teacher data were formulated from the analysis of teacher perceptions derived from their responses to both the teacher survey collected in blog format and the teacher group exit interview. Teacher data analysis centred on the qualitative analysis of teachers’ perceptions blogged in response to the five survey questions formulated from the TPCK framework as well as two further questions as to how their teaching was observed to change and how they observed their students’ learning roles changed. These surveys were conducted at the beginning and end of the poetry unit. The transcript of the teacher focus group interview came from an audio recording using Livescribe Smartpen assisted technology after the poetry unit had been completed. Due to the large amount of data collected, Leximancer software was used to analyse the data in the same manner as the qualitative student survey responses. Firstly, for anonymity, and then to explore the narrative of the methodology, the teachers were allocated pseudonyms (see Table 3.1) for the interview transcript. Teachers also varied in their technological skill levels (see Table 3.1) as well as poetry content knowledge and pedagogical approaches.

Following the methodology outlined in 3.6.2 and the qualitative analysis pathway utilised in 4.3, Leximancer software was used to analyse the teacher data in the teacher surveys and focus group interview. A grounded theory approach was undertaken in this research to develop categories to illuminate the data (Silverman, 2001) and investigate the research question: 'How might the role and relationship of teachers and students change when using ICTs in a middle school English
curriculum, specifically, a Year 9 poetry unit?’ The data were initially categorised into associated segments called concepts on the basis of frequently used terms. Leximancer then semantically analysed these concepts into a more in-depth interpretative ‘themes’ which identified specific trends or patterns based on co-concurrence of words and phrases. Based on their highest percentage of semantic connectedness, called connectivity in Leximancer, major and minor themes were then determined by the researcher and merged; these were visually displayed in a concept map (Smith & Humphries, 2006).

5.2 Qualitative Analysis and Discussion of Teacher Surveys

5.2.1 Qualitative Analysis of Teacher Surveys

Using the Leximancer software to investigate the data collected at the beginning and conclusion of the poetry unit from the four teachers, two projects were created by firstly loading the responses from the beginning of the poetry unit, and then just the responses from the end of the poetry unit. 26 associated concepts were identified from the first analysis and these were categorised into 10 themes based on frequently recurring words and phrases, while a similar number of associated concepts (30) and 10 themes were also identified from the end data responses.

Based on highest percentage connectivity between concepts, word-like concepts that were similar in their meaning or being used interchangeably (i.e. ‘success’, ‘effective’, and ‘lessons’) were merged or collapsed into one. Concepts that were not relevant to the research question (i.e. ‘solutions’, ‘easiest’) or were of low semantic meaning (‘majority’, ‘level’, ‘time’) were eliminated. Themes were merged to create dominant themes with connected concepts being rearranged into the new themes to assimilate all the teacher survey data. Those themes and associated concepts are presented visually in the Leximancer concept map in Figures 5.1 and 5.2, with the concepts
appearing as black labels clustered around their themes (coloured labels). The proximity of two concepts indicates how often they appear in similar conceptual contexts and the spider-like lines show the relational connections between concepts which overlap themes. The themes are heat-mapped to indicate the importance according to the colour wheel, meaning the hot colours (red and orange) denote the most dominant theme, and cool colours (blue and green) denote the lesser important themes.

Further investigation revealed the identified concepts and themes were remarkably different from each other. Figure 5.1 reveals that at the beginning of the project, the dominant themes from the teacher perspective in descending order were ‘content’, ‘teaching’, ‘class management’, ‘student engagement’ with a lesser concern for ‘lesson’ (descriptive of a particular lesson). This descending percentage of connectivity i.e. the frequency of associated word or word-like occurrences is clearly shown in Table 5.2. Of note in Table 5.2 regarding the connectivity percentages is the very high degree of importance placed on ‘content’ (100%) and the high importance placed on ‘teaching’ (91%), with a sharp drop to ‘class management’ and ‘student engagement’.
Figure 5.1. Analysis of dominant themes from teacher survey responses at the beginning of the project.

Table 5.2.

*Teacher Survey Thematic Summary at beginning of the project.*

<table>
<thead>
<tr>
<th>Theme</th>
<th>CONNECTIVITY</th>
<th>Associated Concepts in order of connectivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>100%</td>
<td>Content, work, boys, site, teachers, helpful, web</td>
</tr>
<tr>
<td>Teaching</td>
<td>91%</td>
<td>Task, instructions, process, effective, language, able, windows</td>
</tr>
<tr>
<td>Class Management</td>
<td>67%</td>
<td>Week, student, group, questions, others</td>
</tr>
</tbody>
</table>
By comparison, when Leximancer analysed the responses from the teacher survey at the ‘end’ of the project, the dominant themes in descending order, as shown in Figure 5.2 became ‘student engagement’, ‘teaching’, ‘content’, and ‘technology’ with minor occurring themes of ‘lesson’ (descriptive of a particular lesson) and ‘low’ (reference to low ability students). This descending order is illustrated in Table 5.3 which clearly indicates the high importance of ‘student engagement’ (100%) and the sharp drop in importance in ‘teaching’ (63%), and even sharp fall in ‘content’ (37%) and ‘technology’ (32%).
Figure 5.2. Analysis of dominant themes from teacher survey responses at the end of the project.

Table 5.3.

Analysis of dominant themes from teacher survey responses at the end of the project.

<table>
<thead>
<tr>
<th>Theme</th>
<th>CONNECTIVITY</th>
<th>Associated Concepts in order of connectivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Engagement</td>
<td>100%</td>
<td>Students, majority, week, send, met, process</td>
</tr>
<tr>
<td>Teaching</td>
<td>63%</td>
<td>Work, boys, group, doing</td>
</tr>
</tbody>
</table>
The change in the responses from the teacher survey data collected at the beginning and end of the poetry unit is illustrated in Table 5.4 and indicates a clear perceived shift in emphasis and priorities in terms of the teachers’ perspective from the traditional, content centred-pedagogy to student-centred pedagogy.

Table 5.4.

*Comparison of dominant themes from teacher surveys at beginning and end of project.*

<table>
<thead>
<tr>
<th>Beginning Dominant Themes</th>
<th>Connectivity</th>
<th>End Dominant Themes</th>
<th>Connectivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>100%</td>
<td>Student Engagement</td>
<td>100%</td>
</tr>
<tr>
<td>Teaching</td>
<td>91%</td>
<td>Teaching</td>
<td>63%</td>
</tr>
<tr>
<td>Class Management</td>
<td>67%</td>
<td>Content</td>
<td>37%</td>
</tr>
<tr>
<td>Student Engagement</td>
<td>64%</td>
<td>Technology</td>
<td>32%</td>
</tr>
</tbody>
</table>
This change in role perception is dramatically illustrated in the ‘pathways’ function of the concept maps (see Figure 5.3 and Figure 5.4). The pathways function detects the strongest pathways connecting concepts on the map and tells the story of important relationships emerging from the map by focusing on the dominant connections between concepts on the map (Leximancer, 2011). The dominant theme at the beginning of the project is ‘content’ compared to the dominant theme of ‘student engagement’ at the end of the project. The pathways function illustrates the shift in teacher perspectives.

*Figure 5.3.* ‘Pathway’ concept map showing the teacher focus at the beginning of the poetry unit.
Teacher responses from the survey indicate that there was a change to student-centred pedagogy. Ben commented that:

*My role was more supportive responding to the ‘brothers’ group allowing them to lead/find their own solutions to the (technology) problems ... and supportive to other students and guiding by directing them back to the instruction sheet on the online web site and telling them to ask their ‘brother’ for help before asking me and reassuring boys by praising their responses to the content.*
Charis reflected: ‘There are important changes in my normal teaching practices – setting up for class and very reliant on students who know more than me’, leading to her acknowledgement of success in the adaptation: ‘students all fully accepted their roles now. There are limited classroom behavioral problems; very few students are off-task and their engagement in the program has improved’. Adam acknowledged that: ‘My teaching role this week has been demonstrator and guide,’ and Dianne similarly observed, ‘... mainly a guiding role this week with lots of confirmation (for boys) to think for themselves... I did demonstrate how to update/create home pages.’

### 5.2.2 Discussion of Teacher Survey Qualitative Findings

In summary, the in-depth qualitative analysis of the teacher survey data showed that while overall, teachers were focussed on the ‘work’ that ‘teachers’ and ‘students’ do, it also revealed that teachers with little or no experience of technology integration in a middle school curriculum were able to adapt to their changing environment when technology was integrated into a poetry unit. The adaptation involved providing each other with collegial support, being a demonstrator and guide to students, allowing students to become self-directed learners, training students for peer group learning and support, developing innovative strategies for student engagement and being willing to develop technology skills while trusting students to perform tasks outside the teachers’ skill set. The integration of technology became a catalyst for teacher role change from content/teacher centred pedagogy to a student centred approach.
5.3 Qualitative Analysis and Discussion of Teacher Focus Group Exit Interview

5.3.1 Qualitative Analysis of Teacher Focus group exit Interview

To generate the automated analysis of the teacher focus group interview transcript, a new project was created in the Leximancer Projects folder and the pre-formatted anonymous teacher interview transcripts were loaded. Using the default setting to work from a grounded theory approach, Leximancer generated a list of 31 word-like concepts in order of declining occurrence. Some of the word-like concepts were similar in their meaning or were used interchangeably (i.e. ‘class’, ‘boys’, ‘students’, and ‘content’, ‘work’, and ‘poems’). These concepts were merged or collapsed into one and concepts that were not relevant to the research questions (i.e. ‘cLe’, ‘interviewer’) or of low semantic meaning (‘quickly’, ‘required’) were eliminated from the analysis. Themes were merged to create dominant themes with connected concepts being rearranged into the new themes to assimilate all the teachers’ focus group data. Those themes and associated concepts are presented visually in the Leximancer concept map in Figure 5.5, with the concepts appearing as black labels clustered around their themes (coloured labels). The themes are heat-mapped to indicate the importance according to the colour wheel, meaning the hot colours (red and orange) denote the most dominant theme, and cool colours (blue and green) denote the lesser important themes.
**Figure 5.5**: Leximancer teacher focus group interview concept map with themes and connected concepts.

The themes and concepts in this concept map were merged to create the dominant themes of ‘work’, ‘technology’, ‘boys’, and a minor theme of ‘doing’ while the lesser themes of ‘interviewer’, ‘computer’, and ‘CLC’ were eliminated from the analysis. The red colour in the concept map denotes the relevant importance of ‘work’ as the dominant theme.

The thematic summary which appears in Table 5.5 shows the themes that contributed to teachers’ understanding of their roles in the integrated poetry unit as per the heated map relevancies and connectivity scores. In order, the themes are
‘work’ (red), ‘technology’ (olive green), ‘boys’ (dark green), ‘doing’ (light green), interviewer (light blue), computer (darker blue, and CLC (purple). The dominant themes in this data set were ‘work’, ‘technology’, and ‘boys’ as they demonstrate higher connectivity to other concepts with the lesser themes being eliminated through lack of connectivity to the data.

Table 5.5.

*Teacher Interview Thematic Summary with associated concepts*

<table>
<thead>
<tr>
<th>Theme</th>
<th>CONNECTIVITY</th>
<th>Associated Concept in order of connectivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work</td>
<td>100%</td>
<td>Work, problem, group, time, kids, need, program, stuff</td>
</tr>
<tr>
<td>Technology</td>
<td>90%</td>
<td>Technology, having, things, change, learning, content, poetry, take, teacher</td>
</tr>
<tr>
<td>Boys</td>
<td>52%</td>
<td>Boys, probably unit, different, thought, skills</td>
</tr>
<tr>
<td>Doing</td>
<td>20%</td>
<td>Movie, power point, maker</td>
</tr>
<tr>
<td>Interviewer</td>
<td>08%</td>
<td>Interviewer</td>
</tr>
<tr>
<td>Computer</td>
<td>05%</td>
<td>Computer</td>
</tr>
<tr>
<td>CLC</td>
<td>02%</td>
<td>CLC</td>
</tr>
</tbody>
</table>

Focusing on the ‘work’ theme, the ‘query’ function of Leximancer listed the word groupings that comprise the ‘work’ theme and these suggest two distinct groupings of ‘student roles’ and ‘teacher roles’. These grouping were also categorize in the ‘technology’ theme with distinct word groupings connected to competency, difficulties and role in either learning or teaching whereas the ‘boys’ theme reflected the relationships between teachers and students using technology and poetry.
Teacher’s comments in their focus group exit interviews around the theme ‘work’ (and the associated concept words connected to the theme of ‘work’ e.g. learn, teach) demonstrated how their roles in the integrated technology poetry unit were affected. This change of role was also evident from the observations of all the teachers in the study. Adam most notably explained: ‘Using technology in this unit of work was a huge learning curve... (My) style of teaching is completely different. It is usually teacher directed and changing to a student directed system of learning is a big change’. Charis, the least familiar with technology, reported that: ‘I don’t see myself as being as teacher directed as I was beforehand; yeah, my role has changed because...was it because of technology? Yes, I would say so’. Dianne, with some reservation, stated that:

*Look, the facilitator role is good, if you have the class to go with it... I still tell them what to do with the work ... my patience is really extended but patience with myself as well ... in my role as teacher. I’m still the dictator ... but I think I am now willing to use technology in the classroom.*

However, Ben registered a significant change in the area of student–centred pedagogy: ‘

*My role changed dramatically...I found myself being a learner for the first time in the classroom instead of the sole teacher...now it’s 70% learning and 30% teaching. I had to listen and find the information quickly, in content as well as technology, and the technology made that happen.*

The theme of ‘work’ and its associated concepts ably demonstrate the change of teacher beliefs and practices to student–centred pedagogy through the agency of technology integrated in the poetry unit.
The teachers also made pertinent comments regarding their change of role with students as it was associated with the ‘work’ theme and its associated concept words. Ben noted a dynamic change in his relationship with students:

*There was a huge in role for me because of technology because of the professional conversations that I had with students... if we hadn’t been using technology we wouldn’t have those conversations about the work, that relationship (of trust with students) that they had developed there, and ‘I was becoming a co-learner and they were becoming co-teachers...sort of an egalitarian relationship that was quite challenging at times’.*

Charis acknowledged the new role with her students commenting: ‘I felt very inadequate (with technology)... if it wasn’t for those boys, they knew how to get the movie maker up and running’.

The teachers’ perceptions were confirmed by the IT Head who commented: ‘My observations when I came in, the boys were working together and helping each other... because what one kid didn’t know another kid knew and they seemed to be able to work well that way.

Yet change did not come easily and teachers aired their challenges and difficulties which reflected Ertmer’s (2013) second order barriers that are aspects fundamental and personal to the way a teacher undertakes teaching. Dianne honestly reported: ‘Look, I’m still a dictator and stubborn, too. Look, the facilitator’s role is good if you have the class to do it with. Unfortunately, my class is not that class’. Adam was concerned regarding the poetry content: ‘I wasn’t thrilled with the poetry ... because there’s a lot on new technology there, you got to really have time to teach poetic devices, talk about complexity of ideas and compositions’. He also expressed the
dichotomy between subject content and middle school pedagogy: ‘I don’t think it is our job to be teaching it [technology]. I’d like to see it in a core skills unit but we don’t have that so it’s good that they have those skills by the end of the unit’. Charis voiced the frustration with the first order (Ertmer, 2013) problems of the technology operation:

> It was terrible to get them focused in on one point for any length of time. I gave up on the whole projector thing in the end and just explained things and hopefully they went away and did something I was talking about.

These first order barriers were also noted by Ben: ‘And being time poor is obviously a problem because we’ve been talking in the corridors rather than having to find a specified time ... that structured discussion and support would have been helpful’.

These types of concerns raised by the teachers proved to be developmental issues for professional collegial discussions and enabled teachers to be productive in the integration of technology in the poetry unit as solutions were found collegiately to overcome these ‘first and second order’ barriers.

5.3.2 Discussion of the Teacher Interview Qualitative Findings

In summary, the qualitative analysis of the teacher focus group exit interviews revealed a perceived complementary duality in the role change process between student role change and teacher role change. Teachers changed because students were changing as they interacted with the integrated technology program. At times, those interactions were positive and at other times they were negative but both required a shift in the teachers’ expectations and experience to adapt to what was happening with the technology and the content and with the learning experience of
the students. Certainly, there was a definite perceived change in student-teacher relationships which students and teachers alike raised as a ‘control’ issue. For students it was a question of ‘who is in control of my learning?’ and for teachers it seemed to be a question of ‘who is in control of the classroom?’ These are separate but complementary dynamics from separate perspectives.

5.3.3 Discussion of Teacher Survey and Interview Findings

The qualitative analysis of the teacher surveys and the focus group exit interview focussed on the changing role of the teacher in regard to their use of technology, any changes in pedagogy, and their interactions with students and other teachers. Not surprisingly the analysis of the two sets of data using Leximancer revealed emphasises relevant to the context and purpose of the data collection. The teacher survey data focussed on practical happenings and changes in the classroom, ‘in milieu’ as it were, while the teacher focus group exit interview enabled the teachers to reflect on the whole experience at a distance but while the project was still fresh in their experience.

The qualitative analysis of the survey revealed the teachers experienced a definite and articulated change in role from the beginning compared to the end of the project. Regardless of their level of technological expertise, teachers adapted to their new environment of being in a computer room for English lessons, incorporating what worked from their traditional teacher-centred mode of teaching, and engaged with the integrated poetry unit to develop new approaches that were innovative and effective. The most recognisable change was the shift to student-centred learning by the end of the unit which was accompanied by a shift in student-teacher relationships as teachers understood and accepted the peer group learning model and the socialisation that occurred in the sharing of knowledge. Understanding and
‘managing’ a self-directed learning approach for students was a challenging concept. Recognition of the teacher as learner or apprentice rather than expert was another key concept, particularly regarding the use of technology. The collegial support from other teachers and key people like the Heads of the IT and the English Department enabled the role changes to evolve as knowledge and skills were shared. Invaluable also was the concept of ‘shared ignorance’, that others were experiencing the same problems and working through them. The teachers acknowledged that without the technology integration into the poetry unit these changes would not have occurred.

The teacher focus group exit interview findings were also distinctive in the changes they revealed. A distinct result from the teacher focus group interview analysis was the link between student role change and teacher role change. Having to adapt to technology (some of it totally new) as well as to a different way of teaching content, to changing behavioural patterns that were both positive and negative, meant teachers were continually in a process of evolving, sometimes in the moment of teaching or directing learning, sometimes in preparation for classes and, at times, in reflection or collegial discussion after the event. The most obvious outcome from this analysis was the definite change in the student-teacher relationship over the issue of ‘who is in control of what?’ Again, these issues surfaced because of the integration of technology.

5.4 Comparison of Findings from Qualitative Teacher Analysis with Theoretical Frameworks

5.4.1 TPCK Framework

As outlined in the TPCK model (Mishra & Koehler, 2006b) and discussed in the Literature Review, technology, pedagogy and subject content are closely connected in a transactional relationship. In this study, it was anticipated that teachers would be
conscious of all areas of intersection between technology, pedagogy and content. To effectively use the online delivered technology integrated poetry unit, teachers should ideally (a) have a working knowledge of how to navigate the learning management system in the college and be familiar with basic digital programs like blogs, forums, Power point, Movie Maker, Noodle tools, and Prezi (technology); (b) know how to adapt the content and technology to meet student learning needs (pedagogy); and (c) should have a broad knowledge of poetry content including poetry devices, poetry analysis and poetry writing (content).

Not surprisingly, the finding of the qualitative analysis of both the teacher survey data and the teacher focus group exit interview data did indeed reveal interconnectedness between the TPCK elements in teachers’ thinking, talk and practice that made it difficult to separate the individual components. TPCK categories were used to sample teacher comments from the surveys and the teacher focus group exit interview transcript. However, this exercise failed to convey the dynamic nature of the TPCK modelling as the component elements of TPCK (technology, pedagogy and content knowledge) lose their connotation of learning and teaching when separated as each is dependent upon the other. Adam and Ben, for example, illustrated this transactional relationship and highlighted the role of technology in bringing about the change from teacher/content-centred pedagogy to a more student-centred approach:

Adam:  My understanding of how the technology works and how to explain its use to students improved this week; one of my biggest challenges is the explanation of tasks to students; once I found the best way to explain things it becomes easier to communicate this ...
Ben: I was having to listen and find information quickly and find solutions to things in content as well as technology and the technology made that happen ... I then had to make answers that made sense to the boy, rather than just the pat things that you say to a whole group... even if it's content or technology, you have to learn quickly how to adapt to his need.

Both these comments from experienced English teachers with a working knowledge of technology link technology and pedagogy with content knowledge (TPCK) to bring about learning outcomes. Adam and Ben’s comments illustrate the close relationship between Pedagogical and Content Knowledge (PCK) as well as Technological and Content Knowledge (TCK). Intrinsic to good teaching is the relationship between all three (TPCK). To delete one component is to deplete the learning process because a transactional relationship between all the elements is required to for teachers to ‘produce knowledge’ and students to ‘create new knowledge’ (Mishra & Keohler, 2006b). This is also demonstrated also in the teacher survey data which strongly linked the themes of ‘student engagement’, ‘teaching’, ‘content’, and ‘technology’ at the conclusion of the poetry unit. This was illustrated by the Leximancer concept map of Figure 5.2 and the thematic summary of Table 5.3. In addition, the qualitative analysis of the teacher interview data also showed the strong connectivity between the dominant themes of ‘work’ and ‘technology’ through their associated themes in the Leximancer mapping (Figure 5.5) and thematic summary (Table 5.5) which also demonstrated the interdependence of the TPCK components.

Perhaps the most valuable benefit the TPCK framework provides is the ability to spotlight the significant notable component of teacher role
change from the beginning to the end of the project which in this research was the integration of technology. The teachers’ comments did highlight the role of the technology (TK) component as a major part of the project. Adam commented on the continuous and at times difficult nature of the technology usage: ‘The technology ... was harder than I thought it was going to be ... the continuous use of technology needed me to be continually in the ball ... in required a lot more time and energy’. Charis described how she dealt with her technology inadequacy and dependence on student knowledge in the classroom:

I felt very inadequate ... if it wasn’t for the boys, they knew how to get Movie Maker up and running ... I haven’t had much experience with Power point, so I was very basic but I feel confident now ... I’ve grown. The limiting aspect is you are not the one who knows how this is meant to operate.

Dianne persevered in mastery of the technology component: ‘The major positive was I remembered how to execute the technology tasks required for the content ... this surprised me a little but the further I got into the lesson, the more I was able to help the students’.

Ben was able to use technology to overcome obstacles: ‘I had to listen and find the information quickly, in content as well as technology, and the technology made that happen’.
Whether the teachers had little or sufficient technology knowledge (TK), the demand to solve problems, apply the technology and work with the content was still a constant for each of them. The four teachers had more confidence in dealing with the content (CK) as they were on familiar ground but the pedagogy (TPK) still needed adaptive strategies that continually called for reflective thinking and a change from their normal role, as the comments under ‘content’ and ‘pedagogy’ in Appendix 2 demonstrated. For example, Ben commented:

*The socialization of the peer group working together was a big pedagogical change ... I haven’t seen that work to the same degree before in a normal classroom and I don’t see myself as being as teacher directed as I was beforehand ... my role has changed ... because of technology.*

While technology provided a challenge for both the technology competent teachers and for those with limited technological knowledge and experience, pedagogy was seemingly in a constant state of flux. Nevertheless, the teachers’ content knowledge and teaching experience empowered teacher role changes. TPCK was an effective theoretical model not only to frame the teacher survey questions and focus group exit interview process but it was also an effective tool to demonstrate teacher role change over the course of the integrated technology poetry unit, showing both the transactional relationship of the TPCK components and also highlighting the role of technology as a catalyst for change.
5.4.2. Green’s 3D model

As previously addressed in section 4.4.3 (p.121), Green’s 3D model complemented TPCK by emphasising the reciprocal and interrelated nature of the cultural and critical dimensions of l(IT)eracy, along with the implementation of Moyle (2010) to address the operational dimension. Thus, incorporating three frameworks answered the criticism of by Parr, Bellis & Bulfin (2013) regarding the lack of theoretical clarity in the TPCK framework, because of the ways these dimensions affected each other.

The critical dimension of the 3D model recognises the nature and effect of power relations between teacher roles and students in the classroom (Green & Bigum, 1993). In the educational environment, such as the context of this study, where the relationships between teacher and teacher and teacher and student are being investigated for elements of role change, the critical dimension of the 3D model highlights in particular the essential aspects of technology skills, pedagogical knowledge, and behaviour management when integrating technology into a poetry unit. The effects of technology on classroom power relationships were further explored in accordance with Merchant’s use of participatory culture teacher/student roles of producer and consumer and craftsman and apprentice with reference to the new mediascape (Merchant, 2009). The operational dimension of Green’s 3D model considered the ‘how’ and ‘why’ the technology integration of English changes role relationships in the classroom, while the cultural dimension made visible the main factors that give meaning to the roles of teachers and students and provide context for the perspective of possible change in learning and teaching roles.

In analysing the teacher data using Green’s 3D model, the genus of analysis showed that the dimensions worked in symbiotic cooperation and were present through the
delivery of the technology integrated poetry unit in a constant flow of interaction. However, for the purpose of investigating the interrelatedness of the dimensions, Green’s 3D model allowed the separation of the three dimensions to discuss them one by one and to facilitate the understanding of the effects of technology integration on teacher and students roles in the poetry unit.

Utilising Green’s critical lens, there was a crucial conflict that emerged in the course of the delivery of the technology integrated poetry unit between the pedagogical role of teachers and the learning role of the students centring on the issue of ‘control’. The student voice stated: ‘I love being in control of my learning, technology does that’. However, at the other end of the spectrum, the traditional teacher voice said: ‘Look, I’m still a dictator and stubborn, too.’ The intermediate position was also vocalized: ‘I developed trust in terms of trusting the boys in what they were doing, trusting they were on a pathway I could change if I needed to.’ However, the student-centred teacher voice said: ‘So I was becoming a co-learner and they were becoming co-teachers...sort of an egalitarian relationship that was quite challenging at times because you can’t give them too much power or authority.’

The swing to self-directed learning caused by the introduction of technology into the tradition poetry unit for Year 9 caused a change in the nature of these power relations. No longer was the teacher the ‘sage on the stage’ holding and distributing necessary knowledge and this was often brought about by not being able to meet the needs of the whole class at one time as expressed by Ben:

The fact that they had other people that they could relate to, because they couldn’t ask me all the time because I had 31 in the class. So, having a masters group, the brothers group, really helped with that because, if I have to go to someone, they can all reinforce each other.
Also, the teacher role sometimes changed due to a lack of technological knowledge as Charis explains: ‘I felt very inadequate the same way (with technology)... if it wasn’t for those boys, they knew how to get the movie maker up and running ...’

This was significant because the effect of these changing power relations meant that the teachers had to adapt quickly to a student-centred pedagogy that allowed self-paced learning even though that meant coping with the consequences of not being in control of student learning. The negative consequences were the perceived behavioural problems of disruptive behaviour as boys socialised and the possible effect of technology on lower ability students although some obviously achieved some degree of success:

_Diane: I expected my kids with learning difficulties (specific learning needs) to have problems... the only thing that surprised me a bit, like, some of the kids surprised me; sometimes with the lower ability boys, they weren’t as productive straight away._

Nevertheless, the positive consequences of such an effect were student engagement and productive student work, for example, Charis commented: ‘The boys were in control and given room to be as creative as they wanted, from the bare minimum to those who wanted to push their skill a bit more.’

Regarding the operational dimension, Green’s emphasis on ‘production’ using the technical aspects of language and/or technology, highlighted the importance of operational competency. Analysis of the teacher data analysis suggested that the
integrated technology approach was a catalyst that initiated change in the relational power dynamic of the classroom and in the teachers’ perception of their teaching role. The Leximancer analysis highlighted the dominant themes of ‘work’ and ‘technology’. This suggested two distinct groupings of ‘student roles’ and ‘teacher roles’ with distinctive word groupings connected to the difference between teacher and student competencies, technology and behaviour difficulties and teaching role in dealing with digital literacies. For example:

*Ben:* I found I had to be more adaptive when the technology I had chosen did not work and to realise that the same educational ends and curriculum needs could be met by using simpler devices e.g. power point instead of Prezi and a Word Document compilation where necessary. The content in this case was more important than the vehicle although boys who presented with Prezi were more effective in conveying their message from their poetry devices.

*Adam:* My understanding of how the technology works and how to explain its use to students improved this week. One of the biggest challenges that I have found is the explanation of tasks to students. Once I have found the best way to do things it becomes easier to communicate this.

For teachers, in their role of being producers of knowledge there was, as Ben commented, a ‘huge learning curve’, that required greater knowledge and application of their own digital literacies in sometimes the basic areas of technology but definitely in the operational areas of forums and blogs, power point, Prezi and Movie Maker. In this interplay of technology knowledge application in the poetry
unit, students often assumed the role of ‘craftsman’ and the teacher the role of ‘apprentice’ (Merchant, 2009).

Focussing on the cultural dimension of this study, a key research question asked of the data analysis was what the main factors were that gave meaning to the teacher roles providing the context for perceived role change. The Leximancer analysis of the teacher data analysis indicated that the integration of technology was a significant stimulus for change in teacher roles in revealing a significant movement from content/teacher-centred approaches to student-centred pedagogy from the beginning to the end of the poetry unit. It indicated that this shift to student-centred learning occurred as teachers accepted the peer group learning model and the socialisation that occurred in the ‘sharing of knowledge’ and ‘the creation of new knowledge’ in the participatory culture that allowed the development and acceptance of the new roles of apprentice and craftsman, referring to the new mediascape (Merchant, 2009) that was being created in the classrooms. This collaborative or collective experience emphasising the social dimension as a necessary part of learning seemed to involve ‘the reconfiguring of relationships between learners and experts, as well as teachers and their learning resources’ (Merchant, 2009, p.119). Significant also to the perceived teacher role change was the identification of collegial support whether from the aspect of ‘shared ignorance’, help with technology expertise, pedagogical reflection or behaviour management.

Green’s 3D model of analysis emphasises that there was neither a monochromatic or independent critical, operational, or cultural landscape but a holistic, cohesive synthesis that exists in the combination of all three dimensions (Green & Beavis, 2012).
5.4.3 Other Technology Integration Pedagogical Frameworks

Focussing on the development of technological change in the teacher classroom role, Prestridge’s Model of Instructional Change (2007), developed in the course of Smart Classroom research, shifted the analytical focus of this research solely to the teacher role and the use of technology. The Model for Instructional Change was used to examine the move from the attainment of ICT skills to the use of ICT in learning through teachers’ own pedagogical frameworks. While this research does not encompass the licencing process defined in the Smart Classroom Professional Development Framework, the Model of Instructional Change informed both the design of this study and the analysis of the data in that it identified the change in teachers’ roles when technology was integrated into the English curriculum. The transformational change that progressed from Entry to Adoption to Adaptation to Appropriation to Invention (see Figure 5.6) accurately reflected the journey of the four English teachers in this research as Prestridge explained:

> Adaptation identifies teachers who are adapting their existing curriculum practices to integrate ICT. This is acknowledged in the Framework at the level of an ICT Pedagogical Licence. Transformed pedagogy could be considered as a new paradigm for pedagogy infused with ICT. What is important to teachers striving for effective pedagogical practices with ICT is enabling the transition from the stage of Adaptation to the stage of Appropriation (2007, p. 5).
Prestridge (2007) defines ‘adoption’ as teachers ‘developing and working with some core skills and knowledge about teaching and learning with ICT’, and ‘adaptation’ as ‘identifying teachers who are adapting their existing curriculum practices to integrate ICT’ (p.5). ‘Appropriation’ and ‘invention’ are defined as ‘thoughtful, responsive and future orientated teaching’ (p.5) which favours Gibson’s (2001) ‘pedagogy of learning’ (p.57) and which also focuses on the learner and learning outcomes of Jonassen, Howland, Moore, & Marra (2003): ‘knowledge construction, not reproduction; conversation, not reception; articulation, not repetition; collaboration, not competition; reflection, not prescription’ (p.15). Prestridge’s (2007) statements come with the rider that transformational change in pedagogy using ICT frameworks involves a ‘re-forming’ of teacher beliefs and practices through ‘reflection on their teaching practices, challenging old practices ... and embed(ing) a reflective action process for pedagogical renewal’ (p.5). This transformational approach requires the teacher to act as guide/facilitator in selecting the most appropriate ICT strategy to achieve the learning outcomes. Prestridge (2007) acknowledges that the digital culture
‘challenges pedagogy grounded in print culture and provides opportunities to explore alternate approaches to working with students’ (p.5).

Therefore, this model clearly identified the teachers in this research as adopters in that they used ICT as a learning tool but also as adaptors because the application of the technology integrated poetry unit changed the structure of student learning through the incorporation of the materials they were using as well as classroom techniques. Adam specifically stated:

‘I have begun using technology differently. Rather than seeing it is a new way of learning, I have started using my normal teaching techniques and introducing them into this new environment’.

This demonstrated his movement from adoption to adaptation. Ben also showed movement to adaptation and appropriation when he commented:

‘I found I had to be more adaptive when the technology I had chosen did not work and to realise that the same educational ends and curriculum needs could be met by using simpler devices e.g. power point instead of Prezi.’

To a much lesser degree but still showing the progression from adoption to adaptation, Dianne stated:

‘The major positive was that I remembered how to execute the technology tasks required. This surprised me a little, the further into the lesson, the more I was able to help students’.
Thus, she adopted the technology into the lesson and made the attempt to adapt to the student needs. Charis also reflected on the changes she had to make: ‘I have realised that I have to adopt different strategies with regard to instruction and the classroom...in future lessons.’

Reflecting on the transformational approach of appropriation and invention suggested in the Model of Instructional Change, Ben hints at this change when he comments in the teacher focus group interview:

*You see, having designed the program, I thought that problem of assessing group work through in terms of the first part of the poetry unit. The majority of their first unit was working as an individual producing a power point, choosing things, answering things. So you really didn't get to do group work until you got to the Movie Maker. You had to produce your own work. So, that individuality should have given them confidence to be able to contribute to the group setting. I found myself in the groups saying, ‘okay, now show me which part you did’. And so, when we appointed a group leader, the group leader had to initial what each person did to contribute to the group.*

Ben suggests that as the facilitator/guide, he focused on selecting the best ICT strategies for student learning and outcomes that asked for knowledge construction, articulation, collaboration and reflection. This can also be seen in the learning progression of the poetry unit that connected adaptation (‘what they had chosen in their research’) to appropriation (‘what they had done with simile and such’) to invention (‘what they produced at the end’):
Ben: I think this group, the work that they produced at the end (using Movie Maker), was much more inspirational, much more startling, much more diverse, because it was in the topic range that they'd been engaged with in their choices of poetry, and what they'd done with the simile and such. And there's a lot of correlation between what they had chosen in their research, and what they produced at the end.

Adam also showed some aspects of appropriation particularly in identifying the value of futuristic aspects of technology as well as the development of student learning independence when he commented:

The positives were we had some increase of independence of learners, in my class in particular. They ... improved their understanding of IT skills, I suppose, especially when it comes to skills in developing movies. The skills they developed there are quite valuable and will help many years later on in school.

This change in teachers’ roles came about from a fundamental belief about the learning process that they were involved in, albeit initially with trepidation but by the end, willingly, even from the most resistant of participants. Dianne, for example stated: ‘Not going to say I’m loving it. If I said I love it, I’d lie to you. But I’ve gotten more willingness to implement it’. However, Adam’s comments suggest a more positive evaluation on his teaching practices, challenging his old practices for pedagogical renewal and showing a movement to appropriation:

‘The way I teach that class is different to the way I teach every other class. It’s different to the way I taught Year 9 English in the past. So I guess it is. Yeah, it has to be, because of ... changes in the technology...
and changing to a student directed, system of learning is a big change’.

Moreover, in the transformation approach that the teachers developed from teacher/content-centred learning to student-centred learning from the beginning to the end of the project, they called on knowledge instruction and knowledge construction and chose the better pedagogical strategies to achieve learning outcomes.

Ertmer et al (2011) suggested the progression from teacher–centred approaches to student-centred approaches occurred when teachers have seen evidence that technology integration leads to ‘meaningful learning outcomes’ as evidenced when all teachers acknowledged, despite the technology problems and their concerns regarding behavioural problems, there had been surprising results in both lower and higher capacity learners. Ben reflected on student achievement:

Boys who were slow and had absolutely no skills actually worked to meet the deadlines, and (those) who were probably C students, they left with B results, (because) they actually did the work. They discovered their creativity that they were able to experiment with. And, the visual nature of what we were doing enabled those lower kids to do that, whereas the top kids, they’re always getting good results, anyhow.

Adam acknowledged that: ‘I was amazed with some of the results. Especially with the videos and they were very, very, very much better’. Dianne who struggled at times with her expectations on student achievement also observed that:

Some of the kids surprised me. I knew some kids would work well, and they did. Some kids I didn't know where they were going to go. They
could have gone either way. And they surprised me by actually working well.

Charis observed:

*The other positive, big positive for me, was the self-realization of [student] effort and ability. So, here’s what I can do, but here’s what I need to do in order to get to that final product.*

Teachers’ comments suggested the realisation that meaningful learning outcomes provided a motivation to move towards student-centred pedagogy.

Ertmer et al. (2011) also acknowledged that teachers progressed to technology integrated student-centred pedagogy when the fear of technology was taken away by presenting them with ideas of how students assisted with technology, ‘trouble-shooting’ technology problems for them. Ertmer further suggested that students be involved in the planning process of infusing lessons with technology, even at the regional unit planning level. These comments reinforced the vital role played by the ‘brothers’ group in this study and their assistance given to teachers across all classes in the project as Ben commented:

*The 'brothers' have been constant this week with attendance in their lunch hours for training and support of each other although numbers have dropped but teachers seem to be using the 'brothers' to help in the class room. Several brothers have this week been extremely helpful in finding solutions to accessing the PREZI site and coming up with an instruction sheet to create a necessary 'com.au' email for access to the educational PREZI site and showing other brothers how to*
create a PREZI - this instruction sheet was copied to other classes.

The qualitative findings show the perceived movement from teacher/content-centred pedagogy to student-centre pedagogy was not only supported by the comments of the teachers as cited and contained in Appendix 2 but also illuminated a progression, as suggested by Donnelly et al. (2011) (see Figure 5.7) ‘from contented traditionalist, to selective adapter, to inadvertent user, to creative adapter, based on teachers’ high degree of technological competency’ (p.8). Donnelly et al.’s (2011) framework further informed the qualitative teacher survey and focus group exit interview analysis as it clearly defines the journey of teacher role change that the four English teachers transversed in the course of the technology integrated poetry unit.

Initially, the teachers had identified in the first three categories (contented traditionalist, inadvertent user and selective adopter) as each had a background in traditional pedagogy, and used limited technology as the school policy indicated. Amongst the teachers, Dianne identified as a definite contented traditionalist who was dealing with being a limited inadvertent user in the ICT integrated poetry unit: ‘I was willing to use technology in the classroom, to begin with a smile and say ‘whatever’ and I’ll use it.’ Charis also identified as a contented traditionalist and a willing inadvertent user: ‘I’ve grown but the limiting aspect was not being the one who knows how this is all meant to operate.’ Adam identified as a selective adopter who acquiesced to being, at times, both an inadvertent user and creative adapter: ‘While I have a good understanding of technology, I have found some aspects of the program difficult... but through perseverance I have found the solutions I am looking for.’ Ben identified as a creative adapter: ‘When the technology I had chosen
did not work ... had to realise that the same educational ends and curriculum needs could be met by using simpler devices.’

Adam and Ben had selectively experimented with particular technological tools for student learning and they had used technology to some degree within the school’s policy of IT integration in the classroom. This related to their sense of ownership/empowerment seeing the technology as an opportunity to do something new and interesting with their students as described by Donnelly et al. (2011). In experimenting with this sense of ownership and empowerment, Adam and Ben commented on their adaptation of technology to improve student learning outcomes:

Adam: I have begun using technology differently. Rather than seeing it is a new way of learning, I have started using my normal teaching techniques and introducing them into this new environment;

Ben: I spent a great deal of time this week setting up the blogging connections for teachers to readily connect the their boys’ blogs via a wiki on the poetry unit side administration bar and I sent a Blogging activity report to teachers drawing their attention to boys who had not made their work public for teacher scrutiny or who had not done their blogs up to date. Several of the 'brothers' from my group went to other classes to help with this process to enable teachers to update more quickly.

Charis and Dianne had little integration experience in the classroom consistent with what Donnelly et al. (2011) labelled ‘helplessness/fatalism’ which was defined as, ‘feel(ing) it is beyond their control to do anything about types of ICT resources in their classroom’ (p.1479). This was expressed by Dianne:
The problem I had was with the technology we were using. I have never used Movie Maker; have never used Prezi, pretty much everything except PowerPoint ... and I didn't want to admit to having no idea, essentially.

Charis explained:

It was terrible to get them focused in on one point for any length of time. I gave up on the whole projector thing in the end and just explained things and hopefully they went away and did something I was talking about. AND I’m feeling very inadequate technologically - unable to offer much in this area.

However, the teachers moved from various degrees of helplessness/fatalism depending on teacher technological competency to empowerment /ownership. With participation in the online delivered technology integrated poetry unit. There was evidence of teacher creative adaptation. Ben stated: ‘I found I had to be more adaptive when the technology I had chosen did not work.’ This was also indicated in the collegial discussions with technology support staff and fellow Year 9 cohort teaching staff as the online delivered program was adapted and implemented to meet student learning needs, as commented by Ben: ‘Interaction with other teachers this week was checking where everyone was up to and finding that others were progressing slowly but seeming to gain in confidence with the technology and the content.’

There was also an admitted ‘willingness’ to work with technology as shown by Diane: ‘Not going to say I’m loving it. If I said I love it, I’d lie to you. But I’ve gotten more willingness to implement it.’ These reservations about being ‘time poor’, having better computers, and working from their own classroom with 1–1 devices with
technology support, reflected Ertmer’s (2012) ‘first order barriers to technology integration. The early signs of being ‘creative adapter’ for both Dianne and Charis were evident as Dianne admitted:

*The major positive was that I remembered how to execute the technology tasks required. This surprised me a little. The further into the lesson, the more I was able to help students.’* Charis also observed: ‘*Well I haven’t had much experience with PowerPoint, so I was very basic. But I feel very confident doing PowerPoint now… I’ve grown.*’

For Adam and Ben the pathway was from contented traditionalist to creative adapter through being the selective adopter while, for Charis and Dianne, the pathway was from contented traditionalist through being the inadvertent user in the integrated poetry program to, at times, being the creative adapter. Their pathways are consistent with those Donnelly et al. present (see Figure 5.7 below).

![Figure 5.7](image)

Figure 5.7. Donnelly at al. (2011) process from contented traditionalist to creative adapter.

Donnelly et al. (2011) indicated that the progression from contented traditionalist and inadvertent user to creative adapter was enabled through the teacher’s sense of ownership of the technology and their desire for PCK to develop the student learning
environment either for better assessment results or wider learning experiences. Professional development was also cited by Donnelly et al. (2011) as an empowering strategy for teacher progression. In this research, although professional development was cited as a future implication, the collegial teacher and student support was perhaps the main indicator of their change in ownership of technology integration. Adam and Charis both commented on the strong collegial support they received which contributed to their ownership of technology integration:

*Charis:* I found the support given us was fantastic and I wouldn’t have got through without it. Like... I could annoy Adam having him there next door was fantastic. And then ITHEAD was only a phone call away. That made life easier. At one stage I rang Ben up and screamed ‘help me, help me.’

*Adam:* I think [the collegiality] went really quite well as a group. Any problems that came up we did find a solution, ultimately. And, whether it was the right decision or the wrong decision doesn’t really matter. Because we found a solution and it was a workable solution. We could have done things different, sure, yeah. But that's, that's for next time. So, and that's part of the process as far as I’m concerned. I think the support was there.

The importance of structured professional development cited by Donnelly et al. (2011) also arose, as evidenced in Ben’s response to the question of collegiality:

*I think in reflection that I didn’t realize how much we would need IT support from the IT Head... And that's probably a reflection that maybe we need to do more lead up training in terms of the programs rather than as we go and that's probably a truism that comes out of this. And being*
time poor is obviously a problem because we’ve been talking informally in corridors rather than having to find specified time so we could do it. So, that structured discussion and support probably would have been helpful if we had planned that.

The findings from the individual teacher survey and focus group interview comments supported these perceived pedagogical progressions from contented traditionalist to creative adapter in regard to teacher formulation of technology integration.

5.5 Summary of Findings of Changes in Teacher Roles

The qualitative findings from the teacher data and the lenses provided by the TPCK framework and Prestridge’s Model of Instructional Change both emphasised the ways in which the teachers’ thinking and practice changed from teacher-centred to student-centred pedagogy, consistent with the arguments of Ertmer et al (2012) and Donnelly et al.’s (2011) accounts of teacher progression from contented traditionalist to creative adapter. The use of these frameworks also highlighted the significance of what Jenkins et al. (2006) termed ‘participatory culture’ and the ‘participatory practices’ of media usage and digital literacies (Merchant 2009). The data showed the central importance of social participation through a ‘sense of connectedness’ as described by these new media scholars, and that the teachers and students experienced in becoming both ‘consumers’ and ‘producers’ of knowledge. In this new and emergent ‘mediascape’, the research results have also shown that teachers in the Year 9 cohort participating in the online delivered integrated technology poetry unit, moved from being the ‘sage on the stage’ to being ‘the guide on the side’ (King, 1993), developing less traditional and more transformational instruction. Kist (2012) and Carrington(2009) would describe these teachers as having moved from being
content teachers to processors or facilitators of learning, or, in the words of Kerin (2008), to have moved from being less Victorian to more ‘new millennium’ digital instructors thereby becoming curriculum explorers. The teachers have become what Moyle (2010) would describe as technology enablers, innovators and collaborators, or in Ertmer’s terms (2013), embracers of student-centred strategies. Whatever lens is used, undoubtedly, the relationship between teacher and student changed in this study through the integration of technology, with the role of teacher and student evolving into a reciprocal mode of teaching and learning that placed the student at the center of teaching and the teacher at the center of learning.
Chapter 6: Conclusions and Implications

6.1 Introduction

This chapter revisits the main research question and summarises the methods and techniques used to collect data to address the question. The analytical methods and theoretical frameworks are reviewed to present the findings as a distillation of these processes. The contribution to the body of literature on changing roles in ICT and English is clarified and as well as both the limitations of the research and the intimations for future research. The implications for schools, teachers, students, and curriculum development are also presented.

6.1.1 Summary of the Study

The research for this project was stimulated as early as 2001/2 due to attendance at various IT Share Queensland Conferences which focussed on the emerging possibilities of the virtual classroom and online delivery of secondary school courses. These conferences highlighted the need for Australian case studies in the KLA English. This gap in the current body of knowledge is clearly consistent with the observations which have been made by Eadie (2011) regarding the introduction of ICTs as a cross curriculum priority in national curricula worldwide and my school’s initiative to integrate technology in the curriculum. The implication, both locally and globally (Kerin, 2008; Prensky, 2012; Turner, 2011), was that technology could be viewed as the ‘Harry Potter’s wand’ of educational miracles to revive the ‘Hogwarts’ of Australian educational institutions. Questions, therefore, about whether technology has changed the educational landscape of the Australian classroom with self-directed student engagement needed to be asked. In addition, does teacher and student mastery of the wand of technology determine learning effectiveness or is it
rather the student–centred pedagogical approaches of the ‘guide on the side’ or again the transformational magic of the digital culture that engage adolescents?

Choosing the 2010 Year 9 cohort at a regional Queensland private boys’ school where I was teaching, I designed and implemented an online technology integrated poetry unit delivered by the school’s then learning management system (cLc) to investigate the question, ‘How might the roles of the teacher and the student, and relationship between them, change in an ICT Year 9 poetry unit?’ To answer this question, data were collected from both teachers and students regarding their perceptions and experiences of the learning management system. The participants were four English teachers and their classes located in four computer rooms over what was initially a ten week term but which spread into three weeks of the next term. Teachers and students responded to a seven question survey which firstly asked students to use a 1-5 scale (1 being very negative and 5 being very positive) to grade their response to the questions and then explain with a brief qualitative comment why they chose that scale. Secondly, teachers responded to a similar set of the same seven questions but only with more detailed explanation. This occurred at the beginning and end of the project giving an opportunity to compare changes in teacher and student responses over time. As well, the teachers participated in an focus group exit interview framed similarly around the seven questions. The interview was digitally recorded and subsequently transcribed for analysis. The TPCK theoretical framework was used to design the survey and interview questions.

Case study methodology was utilised to investigate the research questions as an embedded multisite with a mixed methods approach using both quantitative and qualitative analysis. While quantitative and qualitative forms of analysis were used to analyse the student results, qualitative analysis alone was used to analyse and compare both the teacher survey responses and the teacher focus group exit
interview transcript. Thematic analysis using grounded theory was employed with Leximancer software as an external automated analysis of teacher and student data while descriptive analysis was used for the quantitative analysis of student scale responses from the surveys. Both the quantitative and qualitative data were then further analysed using the TPCK (2008) theoretical framework, Prestridge’s (2007) Model of Instructional Change (for the teacher data) and Starkey’s (2011) developmental model as well as reflections on Green’s (1998) 3D model and the Donnelly et al. Teacher Integration Model.

6.1.2 Limitations of the Study

While the proliferation of analytical frameworks could be considered strength of this research with regard to methodology, a possible limitation could be highlighted. The data collected provided abundant material for research which could have been analysed with greater focus with a more limited range of analytical frameworks. There was also the unrealistic expectation on the part of the researcher that the teachers and students could clearly communicate their views on the survey and interviews questions. While the study benefited from spontaneous responses, at times the response lacked the depth that could have further informed the research. Another limitation to the study was that the findings were based on the perceived views of both teachers and students and could have benefited from an empirical assessment of teacher and student technology competency at the beginning and end of the project. However, the ethnographical nature of the study did provide useful insight into the relationship aspects of teacher/student relationships.

Another limitation was that it occurred at the point in the school’s transition from desktop computers to a 1-1 laptop program, thus limiting the research data to the
desk top computers in the computer classrooms. Since the original data were collected in 2010, the educational environment in both the original school involved in the research as well as the general educational environment has moved from computer rooms and desk top computers to 1-1 programs with portable computer devices including laptops, iPads, iPhones, and (in other schools) the innovative BYOD (Bring Your Own Device) program. While this research served as an introduction and preparation for the 1-1 program in the original school setting, it would be beneficial to compare the findings of this research to an analysis of teacher and student role change in the contemporary setting where portable mobile devices are part of the school culture.

A further limitation was the paucity of time experienced by the teachers with regard to not only the professional development required for the project as well as the professional discussions during the project, but also the time required to post responses to the online surveys. This was a limitation that as the project proceeded, teacher time required for preparation for the technology integrated poetry lessons mitigated against the originally planned weekly posted surveys reducing both the teacher and student data. The elimination of these aspects would have provided a beneficial effect on the research.

6.2 Major Findings of the Study

The research question, ‘How might the role and relationship of the teacher and the student change in an ICT English Unit, specifically, a Year 9 poetry unit?’ was refined from the original focus questions which included:
• Does integrating computer technology affect adolescent Middle School student engagement in KLA English?
  o What do students report as being enjoyable when integrating technology into the English curriculum?
  o How does integrating technology affect students’ perceived attitude to the English curriculum?

• To what extent can teachers and students participate productively in an integrated computer technology online delivered English course?
  o Do teachers and students perceive that they have the requisite technological skills and knowledge to participate productively in an online delivered course?

• In what ways does integrating computer technology into a middle school English curriculum change roles and relationships between teachers and students?
  o What do student/teachers value in an integrated English technology unit?
  o What do students/teachers perceive as being effective learning/teaching in an integrated technology English course?

The major findings of the research project substantially address the primary research question of perceived teacher and student role change in an ICT Year 9 poetry unit but the results also answer the focus questions as well. The analysis showed that there was perceived observable change to both teacher and student roles in the technology integrated poetry unit. For students, this meant that they observed that they could assume control of their learning and become self-directed learners in their emergent roles of craftsman, producers’ and ‘creators’ of knowledge, confirming
other research in this area (Jenkins et al., 2006; Merchant, 2009; Starkey, 2011). They reported that they were able to assume the role of co-teacher and transfer knowledge to other students about technology and poetry content. This role became dominant in the project as it developed from the ‘brothers’ group to other members of the classes as a natural progression based on socialisation between the students in their own classes and across the classes when the ‘brothers’ helped teachers in other classes. This expanded to a peer group learning/teaching pedagogy that the teachers affirmed. As a consequence, the research question of perceived student technological competency was answered as the student reports in the surveys noted conclusive perceived evidence of notable student technological development across the cohort. The students also noted that they valued the learning freedom the technology created, the sense of achievement that they could also do the subject content work expected of them, the ‘fun’ that working with computers brought, and the help they received through socialisation of peer group support in their learning. These benefits engendered an observed heightened sense of engagement. In fact, the two most effective strategies that effected role change for the students was firstly, the use of computers to access their work, and, secondly, the socialisation of their peer group in the learning process. Certainly for the vast majority of students, use of computers and access to their peer group changed their attitude towards both English and poetry, which traditionally have not had a high approval rating amongst boys. The many comments in the ‘change for the better’ response in the student survey and numerous student comments indicated that technology integration gave a sense of independence and enjoyment to KLA English. The perception from student and teacher comments seemed to indicate that use of the computer was almost exclusively responsible for this change as it was something they were mostly familiar with and/or could quickly master with the help of their ‘brothers’.
For teachers, the perceived role change because of technology integration was notable, demanding and, in some instances, challenging, endorsing the research of Kajder (2004), Kerin (2008), Merchant (2009), Ertmer et al. (2012). It was notable because it became obvious from the very beginning of the poetry unit that the swing to student-centred learning was unavoidable and this caused some teachers to find themselves out of their depth with technology and dependent, in a good way, upon students for technological knowledge and applications to the poetry tasks. This perceived shift to student-centred learning required collegial support and also required the pedagogical changes and the technological knowledge that was needed to be assessed on a lesson by lesson basis. The technology integration was demanding because there was a sharp learning curve that required time, energy, and effort for planning and regular adaption of tradition pedagogy to meet student behavioural and learning needs. At certain stages, the integration process was challenging, not in a destructive sense, but in the sense of teachers having to take the role of ‘co-learner’ or even ‘apprentice’ to the student and learn to become the ‘guide on the side’ rather than the ‘sage on the stage’.

Nevertheless, in terms of the perceived role changes for both teachers and students, the teachers affirmed and valued, and some even found it surprising, that by the end of the project, the students seemed to have accepted their roles as self-directed learners with the necessary help of technology; in fact the teachers also agreed that the technology integration was the single most effective cause of change in their teaching role. With regard to teachers’ level of technology expertise, certainly at the beginning of the project all teachers were challenged by the level of knowledge needed and the rigor of the course requirements, although some more than others. However, this did not diminish their willingness to participate in the project and their growth in knowledge and skills over the course of the project.
6.3 Contribution to the Literature on Changing Roles in ICT and English

The project that informed this research was undertaken by the researcher as a researcher/participant and as such allowed for positive interaction and understanding of the process that took place from the teacher perspective while providing in depth observation of the student experience. The project relied largely upon the trust relationship developed with the school administration, IT staff, fellow teachers, and the students themselves. As such, the research results have led to the dissemination of authentic teacher and student voices within a practical working environment of four classrooms of Year 9 students learning about poetry with technology. Accentuated in the research is the positioning of the student voice which allowed for genuine, spontaneous student response to the TPCK developed survey questions. These TPCK developed questions, augmented by using Green’s 3D concerns for context and culture, gave students the opportunity to assess via scale measurement their own view of role change in the learning situation with resultant explanations recorded through voluntary measurement.

The innovative contribution of this study to the literature on changing roles in ICT integration and English is the unique application of the TPCK theoretical model to the original survey questions and the reflection on the data analysis using the TPCK model for further examination. Hofer and Swan((2009) as well as Angeli and Valanides (2009) and Saad, Barbar, and Abourjeile (2013) had foreshadowed the use of TPCK with student data but the major contribution of TPCK had, until this research and to the best of my knowledge, been focussed on the teacher perspective of the TPCK elements. Thus, this research presents the student perspective as a complimentary view of the effect of teachers’ TPCK applications on students in terms of learning outcomes and students’ perceptions of learning with technology’
(Koh, Chai, & Lee, 2015). This research reinforces the reciprocal nature of pedagogy and learning as it highlights learner knowledge as an important core knowledge base from which teachers apply the pedagogy.

Of significance also was the application of Green’s 3D model as it informed the research regarding the cultural and critical dimensions by providing a balance to the theoretical criticism of TPCK. While TPCK clearly demonstrated the intercorrelation of technology, pedagogy and content, Green’s 3D model revealed the power relations between student and teacher and teacher and teacher and pinpointed the socialisation of peer group learning as a critical component of student and teacher role change induced by the integration of technology. Furthermore, Prestridge’s (2007) Model of Instructional Change provided a framework to review teacher roles in ICT integration and the research findings verified the progression from entry, to adapter, to at least the adopter, and in some cases in the research data, to inventor, as a descriptive pedagogical progression outside the formal licencing Smart Classroom Professional Development Framework to which Prestridge (2007) links the Model of Instructional Change. The significance to the body of literature is that the research evidence places the Smart Classroom Professional Development Framework outside the formal IT context and uses it as a guide to allow teachers in a technological enabled environment to formulate a pathway to integrate skills in an identifiable productive pedagogical framework. This in turn directs the competency and the confidence of the teacher involved in technology integration.

6.4 Future Directions for Research and Practice

As outlined in 6.1.2 Limitations of the Study, a limitation of this research was that it occurred at the transition point of change from desk top computers to a 1-1-laptop
program, thus limiting the research data to the desk top computers in the computer classrooms. This research would benefit from a similar study to compare the findings of this research to the findings from an analysis on possible teacher and student role change where laptops and iPads or a BYOD (Bring Your Own Device) program were operating in a contemporary educational setting. In the data collection for this project, Adam interacted with the Interviewer and commented:

Adam: *This (computer room) environment isn’t conducive to that (integration) at all... I’d like to see it in a normal classroom.*

Interviewer: *Is it possible for you to imagine a classroom full of laptops, trying to do that (integration), as opposed to being in the computer room. Would that make any difference, at all?*

Adam: *Oh, yeah, and this is the problem. I think they see their computers as a separate part of their life. Rather than just being another instrument like a pen and paper. And once we start changing that mentality, we’ll change the way they use their computers.*

A further direction for future study exists in the extension of the student voice in the TPCK methodology as outlined in 6.3 Contribution to Literature on Changing Roles in ICT and English. Archambault & Crippen (2009) highlighted the need for a component in TPCK framework, albeit to aid teacher education programs, was the ‘knowledge of students’ misconceptions, understandings, thinking and learning in a particular subject matter and how these might be represented using technology’ (p. 73). In their concluding comments, they observed that ‘modifications of models that influence the way knowledge is conceptualised were needed’ and that their study suggested ‘that perhaps a different structure was needed to describe the domains of technology, content and pedagogy and their possible interactions’ (p. 84). Koh, Chai, & Lee (2015) have emphasised ‘the
effect of teachers’ TPCK applications on students in terms of learning outcomes and students’ perceptions of learning with technology’ (p.460) and Saad, Barbar and Abourjeili (2013) have broken new ground with regard to ‘the learner and context knowledge as basic constituents of TPCK-ICT’ (p.10). However, research which reinforces the reciprocal nature of pedagogy and learning as it highlights learner knowledge as an important core knowledge base is an essential development in tracking student transformational learning.

6.4.1 Implications for School Practice

Effective technology integration calls for schools to provide and sustain hardware and software availability, network connectivity, sufficient device-to-student ratios, and teacher training and confidence in using technologies in the classroom (Ally, 2013; Flanagan, Buck, and Richardson, 2013; Pegrum et al., 2013). To this end school administration needs to constantly review 1-1 technology programs for effective pedagogical integration and conduct consequent reviews of current cultural trends for adolescents, for example iPad/iPhone usage, other portable mobile devices (BYOD – Bring Your Own Device); cultural engagement based on relevance for students is also paramount for student-centred learning/teaching (Newhouse, 2014). Schools also need to review timetabling and structuring in the middle school. This is particularly relevant with the introduction of Year 7 into high school for the implementation of middle school student-centred strategies that allow for student development of technology skills ‘in situ’ (Kist, 2012).

It is essential that school based professional development for teachers with both in-house shared knowledge sessions and workshops for specific skill development which are also aligned with pedagogical practices relevant to technology integration, for example Movie Maker, school based Learning Management Systems ( Schoology,
Canvas, Moodle, Noodle Tools, Paint). ‘TeachMeets’ have become a regular feature of teacher professional development that fit the time-poor teacher in a relational and productive way. These informal meetings can be a regular insertion of meetings/un-conferences into school staff meetings or after school sessions where teachers can share good practice, practical ideas and personal insights into teaching with technology relevant to current units of work in the curriculum. Participants are encouraged to be ready to volunteer an idea, a tool or a website that they have delivered in their classroom. The idea behind TeachMeet is hearing stories about learning, from teachers and sometimes students as well. One key element of a good TeachMeet is offering a variety of short, sharp presentations between two to seven minutes rather than longwinded keynotes. Teachers need to speak with other teachers about technology to build competency and confidence in the classroom. This can also be accomplished through cross fertilisation with other technology integration teachers in learning communities. The development of short in-school online webinars for specific knowledge development has also become a feature of school professional development programs.

6.4.2 Implications for Teacher Practice

The research findings revealed a critical need for improved teacher technology skills. While the previous section outlined the prospect of professional development for pedagogical practices from the school administration perspective, for example TeachMeet, teachers also need to take responsibility for their own skill set development. This can be achieved in various ways beginning simply with the development of collegial networking and talking informally with other teachers about their practices and knowledge of technology.
A developing trend for personal development is the ‘Flipped Professional Development’ model (Bishop & Verleger, 2013) which can cover aspects of technology, pedagogy and subject content and allows teachers to personalise and choose the depth of instruction needed to develop their skill set. The model is a reversal of the traditional teacher improvement process where teachers receive training together with other teachers, and then are expected to integrate this training on their own in the classroom, or in small professional learning communities. There is little personalized learning, front-loading, or pre-assessment of their individual learning needs. Horrigan (2007) reporting for ‘EduPlanet 21’ cites the rise of in-person training to support personalization, diversity, and depth of instruction particularly with the adoption of the Flipped Professional Development Model.

The ‘flipped’ version of this process sees teachers accessing key development resources, for example digital technology and multimedia, in an organic and self-directed way on their own while also being able to access peers, new resources, and content experts to respond to questions, clarify thinking, and equip with new tools. This allows for just enough, just in time, just for me learning of ideas based on a teacher’s curiosity, and led by the author expert’s leadership and support. The easiest way to define flipped or blended professional development, then, is a sequence of professional development where individual inquiry and collaborative activity combined with online and face to face experiences can lead to deeper knowledge about curriculum and pedagogy. Put more simply, the teachers explore content on their own using online interaction with experts in the field, then work together to correct misconceptions, rethink positions, and continue creating knowledge in a highly constructivist approach that leads to changes in practice. This offers a sustainable and affordable method for continuous improvement.
6.4.3 Implications for Student Practice

The research findings indicated the perceived key role played by the ‘brothers’ group through peer group learning, assisting at times with one-to-one and group teaching that served as a model for the rest of the cohort and was an observable positive stimulus to perceived role change for teachers and students. The role of a highly skilled group of students in a technology integrated classroom has pedagogical benefits for both teachers and students alike, allowing the teacher to respond to different student needs in the classroom, and the student to develop self-directed work capabilities in the goal of becoming an independent learner. However, the implications from the project also indicated that such a group needs training and recognition to both develop their own skills and to transfer knowledge both in technology and content at the classroom level in the capacity of ‘craftsman’ and co-teacher as well as involvement at the planning level as co-consultants with teachers. Teachers and students benefit from a purposeful development of the role of student as co-teacher in a participatory culture where they can develop as craftsman.

An associate implication from the study is the skill development for students ‘in situ’ with technology relevant to tasks that are cross-curricula in keeping with the Australian Curriculum recommendations. Transferable, life-related skills are mandatory in the contemporary educational environment and purposeful development of technology skills that promote metacognition serve to promote student achievement across the curriculum.

6.4.4 Implications for Curriculum Practice

Referring to the development of transferable student technology skills, curriculum leaders should identify subject specific technology and utilise cross-curricula
planning to reinforce technology skills across a range of subjects using the same tools and techniques across the KLAs. An essential concept in teacher and student technology development is the repetitious use of technology tools and skills in a variety of contexts. To this end, curriculum leaders need to plan and develop progressive units of work (scope and sequence) within the curricula in consultation with classroom teachers. Relevance of tasks associated with relevant technology in the context of student engagement will promote teacher and student ownership of the technology and the learning process.

A further implication from the study is the planned development of multiliteracies at the middle school level. Evolving technologies and globalisation presents curriculum developers with the challenge of creating learning experiences to help students develop competencies that enable them to function successfully in a dynamic society. Today’s learner is expected to be multiliterate and be able to analyse and construct multi-modal texts. For this to occur, important factors such as teacher technology competencies and expertise, access and integration of technology and facilitation of effective learning scaffolds should be considered in the context of the curriculum.

6.6. Conclusion

Is ICT the ‘Harry Potter’s wand’ for engaging student learning and developing pedagogy on English? Has the 'wand of technology' proven to be the elixir of engagement prophesised by Dumbledorian theorists (Turner, 2011; Prensky, 2012), ushering in Kerin’s (2008) ‘new millennium’ with the vision of self-directed contextual leaners for the latter day adolescent ‘educational magicians’?

This research has investigated the contemporary phenomenon of technology and how ICT integrates into the English curriculum by engaging adolescent boys in Year 9 in an integrated online delivered poetry unit. The findings of this research project show
that integration of technology does fulfil many of the anticipated promises for student engagement but it comes with dynamic changes to the roles of both teacher and student. Teachers and students in this research project both agreed that technology changed their roles in the classroom. For students, the change of role meant fun, achievement, control of their learning, learning from their friends, sharing their knowledge with their teacher, creating new knowledge, becoming independent learners, being transformational, and moving from being passive learners to being active learners, ever curious about the world in which they live. This is captured in the response of Rowling’s (1999) character, Hermione Granger, to Ron Weasley:

*What are you taking Muggle Studies for?’ said Ron, rolling his eyes at Hermione. ‘You’re Muggle-born! Your mum and dad are Muggles! You already know all about Muggles!’ ‘But it’ll be fascinating to study them from the wizarding point of view,’ said Hermione earnestly (4.2.19-20).*

For teachers, the change of role meant the challenge of becoming the Dumbledorian ‘guide on the side’ rather than the ‘sage on the stage’ of Severus Snape, of being collaborators and facilitators of learning, technology enablers and explorers of new pedagogies, roles not easily managed but when accepted, changing irrevocably the dynamic of the classroom and summed up in the words of Rowling’s (2000) character, Albus Dumbledore:

*‘It is our choices, Harry, that show what we are, far more than our abilities’ (18.61).*
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GANIZIRANOST/mobileclassroom.pdf


Publications.


Retrieved from  [http://dx.doi.org/10.1080/14759390100200102](http://dx.doi.org/10.1080/14759390100200102)


THE CHANGING ROLE OF TEACHERS AND STUDENTS IN AN ICT ENGLISH UNIT


Lingard, R., Martino, W., Mills, M., & Bahr, M. (2002). *Addressing the educational*


Appendix 1:

Sample Student Survey Comments in TPCK Categories

| Technology | I think to use the computers instead of a book is brilliant! People these days are always on computers and teaching English this way not only teach students English but also how to work around a website.
|            | Most enjoyable is the technology - prezi because it so good!
|            | It was easy to work with technology once I got some help. I can get most of the work but I need some help at the moment, I find the content strange.
|            | The most enjoyable part was using the computers and the least enjoyable thing was trying to find the right poem. Everyone did their own work
|            | I like using the computers as I look forward to English now. At the start of the term I thought it was going to be boring but now I think it is fun.
|            | I believe I worked very well to show what I knew with my poems with all the new technology we used for this assignment. This included video cameras, microphones and windows Movie Maker. At the start of the assignment we had trouble with the video formats but this was soon resolved and we had no trouble for the rest of the assignment explaining what the group was learning. |
I am now working better with technology. I can work done faster with knowing how to use this program better.

I’m learning in a different way because I like to work with computers, it is fun and good to work on. Better because it’s fun to work on the computers and to help people achieve the results they’re looking for.

Adding my poetry blogs was easy and finding my poems was hard but I found a site that had some good poems (on the themes in the task). It was fun creating animations to show their meaning and they looked pretty cool but I didn’t have enough time to make them look really good. Well I know how to convert flash files into AVI files and be able to make them compatible with Movie Maker to say what I want from the poems.

I have worked great with the technology and i found that doing the work is much easier, and I have found nothing difficult to work with. yes, i did find it much easier to work with the poetry. With technology we got to display our work< rather than say it or write it. _ it was a lot easier and better because it was funner than writing or presenting it with an oral. I have worked well with technology this week.

I think the skills i am learning today will help in the future and I understood how to use the technology and found it easy to use.

Poetry Content

I work reasonably well but i had a bit of trouble with analysing the three poems that i had to find. I understand the poetry content pretty good.
i have learnt a far bit about metaphors and poetry this week. The changes are good because i have learnt more about my work in English and i feel this is good.

i found most of the computer work easy and had very little trouble with it. I understood most of the poetry and had very little difficulty with it.

Yes I understand the poetry now. I am enjoying learning the new things on the computer. i need a little help to get in to the poems, I didn't help or hinder. I pay attention when they show you how to do the work and use the computer.

I am using the computer more in school, others helped find out where everything was. I helped with the computer as it was a lot easier to us. it has been easier doing our work on the computer.

It is better- the computer is easier to use with English. it is much easier using the computer and the programs. I am doing much better in knowing how to learn to do a poem, using the computer for work and doing the poems. Every one helps every one with getting their jobs done. Sometimes I helped, much has changed and its easier to work on the computer.

I found it much easier to do my poetry and English work much easier with the technology. It is much easier than the olden day writing, and it is much easier to know what to do when you have been working on the computer long enough.

Adding my poetry blogs was easy and finding my poems was hard but I found a site that had some good poems. It was hard
trying to understand the poetry but i figured it out and i can understand it now.

| Learning | I have had to work harder and concentrate, overall it has been better once I got the programs going. I think I worked average because I was a bit unsure of what to do and I missed Mondays lesson. I think I worked well on the worksheets and what I did in two lessons.
All of this is a walk in the park, and it is fun.; this work is fun, better than doing English in a classroom!
No hardest part but the easiest was finding poems. Most enjoyable was finishing the work, least enjoyable was starting it.
It is quite easy for me to learn because I have grown up on computers most of my childhood. Better because it’s fun to work on the computers and to help people achieve the results they’re looking for and the results I am as well.
Learning is good because I am achieving my potential I understood it almost perfectly. The hardest part was finding the final hyperbole poem. |

| Cooperative learning | The people around me helped me to work fairly well but there were a few times where they were disruptive. I worked fairly well with the people around me.
Others helped me a lot and I found it much easier to do the activity with their help. I helped them go on with their work.
The Brothers group helped a lot of people.4 I helped people in the class move on with the work |
## Changes in Learning

- Working with the group was the best. Alright. Helped A Bit. Helped quite a bit. It was easier doing work on the computer. I couldn’t really help anyone cause i was struggling with my behaviour on the computer. Since i was corrected it has been better and i am getting more work done. Much better now i use the computer better cause i am not causing as many disruptions as i was.
- I have helped a lot of my mates this week by helping them getting into the programs and what meanings to words are. i was really helpful and a lot of people helped me especially keep up with the programs and with everyone in the class.
- The Brothers group helped a lot of people. I helped the people in the class with their work. I’m learning in a different way because I like to work with computers, it is fun and good to work.
- I found that no one hindered me and the teachers helped me a lot i helped a lot of people in the class by teaching them how to use CLC and also by giving them ideas about what to put in answers. I found that i learnt a lot quicker and found that doing homework is easier and more fun being able to do everything online instead of using pen and paper.

- Changes in learning: i think i have changed a lot, because i have got more work done than usual i got a lot more work done. i think that the technology helped with the ‘summer rain’(poem), it worked well for me but the’ flanders’ field (poem) was a bit difficult.
There has been some change, I have learned to use a computer better as well. The changes have been better for me, because I have gotten to be able to use the computer better to do my English work.

I had done all the work myself and only needed to be helped a little bit. I was too busy doing my own work to help others in the class but I have changed in the way of learning poetry as I’m actually doing it.

The brothers help a lot (I didn’t help a lot but did do some help.) I am doing more work than normal and improving my English - it has been great changes and quicker than I thought.

Yes it is funner and I think I am learning more, I am enjoying English much more- Better because I am learning how to use the site better and do the work better. I have found it easy to do the work but hard to find the forums- it was easy to understand the poetry but hard to understand some of the tasks.

I have never done much on a computer only for school and that is why I have gotten quicker at typing which I have all ways wanted to do. I think it was a good thing cause now I know how to find more stuff on computers and learn better. I am having no trouble today with some technology but I have understood everything in poetry that has been thrown at me.

I have noticed that I am finding the technology part of our work very easy and because I am not distracted by sore arms and cramps, I have been able to concentrate on my schoolwork more. I believe that these changes are for the better as I am
understanding my work more and getting it done better, meaning I am learning more.

There was heaps that changed about my learning because it was way more FUN! The changes are better because we sit in a classroom all the time and it is good to have a change to help my learning. I found things easily and finished them without trouble.

The changes in how I am learning now on the computer is different to in the classroom because of the way you do the poems and how many pages of work you have to open on the computer to get the right information I think that it is better that we are on the computers because you are learning how to do things, this include: how to do things on a computer and how people write poems and how you can write.

There has been a bit of a change in my learning because I find it easier to work on a computer.

| Changes for better or worse | I was independent this week so I did not help or hinder others. Most of all in being independent and able to work at my own pace especially from home. Change for better as I am learning English better. I helped where I could. I am understanding what the teachers are saying and following the teacher. I am able to do my work in English better - my avatar was cool, I could log in properly and the instructions were easy to follow. I seem to be doing my work better and getting it done a little quicker because I understand it better. These changes are for the |
better because i am working harder and getting my work finished better.

These changes are great because i can get things done a lot quicker. `i think i worked well on prezi but i found it difficult trying to make it work on the computer.

Better: because i have learnt how to use computers better_ I have found it easy to work with the technology but difficult to find some of the information. i found it very easy to do with very little complication- it is fun because it is interactive but it is hard to find the information sometimes.

The changers are better because the work is on a computer and you have time to get into it.

| Hindering               | The people around me helped me to work fairly well but there were a few times where they were disruptive; |
|                        | I neither helped nor hindered; |
|                        | I believe I hindered the learning because i was asking for a lot of help; |
|                        | I did hinder some people sometimes and I helped Luke do his blog entry and helped people find things; |
|                        | I helped people a bit but I think I hindered people a bit but I improved from last week; |
|                        | Others hindered by arguing with me about the pictures for the movie; |
|                        | The other boys hindered me a lot- this was because they all wanted me to help them or do their work for them. I did some but got my work done later; |
Sometimes people hindered the lesson by getting sent to RTC or get the RTC questions which included me a few times.
### APPENDIX 2:

Sample Teacher Interview/Survey Comments in TPCK Categories

<table>
<thead>
<tr>
<th>TPCK</th>
<th>TEACHER INTERVIEW DATA</th>
<th>TEACHER SURVEY DATA</th>
</tr>
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<tbody>
<tr>
<td>TECHNOLOGY</td>
<td>B: For me, the technology side of it, I ...</td>
<td>A: My understanding of how the technology works and how to explain its use to students improved this week. One of the biggest challenges that I have found is the explanation of tasks to students. Once I have found the best way to do things it becomes easier to communicate this.</td>
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<tr>
<td></td>
<td>It was harder than what I thought it was going to be. I thought it would be easier, uh, because I haven't done a unit where I had [00:10:00] to do it, a whole unit of technology. Usually do it this part of the class or that part of the class, but the continuous use of the technology needed me to be continually on the ball. I found that it required a lot more planning. I just couldn't show up, make it up as I went, which you do sometimes. So I found it was difficult</td>
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at times and just required a lot more time and energy than what I expected

D: The problem I had was with the technology we were using. I have never used Movie Maker; have never used Prezi, pretty much everything except PowerPoint. We couldn't ... The kids had no idea, really, and I didn't want to admit to having no idea, essentially, until I got Brendan down there to help me. And then, few hands went up, but more had used it then sit and admit to it. I didn't have any of it on my stuff at home. So learning how to use it at home didn't work... So, it was really difficult with regards to, this is what you've got to do, but I don't know how to do it, and, sorta do it.

C: I've grown but the limiting aspect was not being the one who knows how this is all meant to operate

D: Some computers wouldn't link, some computers would link. But I think

A: While I have a good understanding of technology, I have found some aspects of the program difficult this week. Simple functions that are easily achieved with other web publishing software are not easily found on this platform, but through perseverance I have found the solutions that I am looking for

D: The major positive was that I remembered how to execute the technology tasks required. This surprised me a little. The further into the lesson, the more I was able to help students.

D: Having never taken a ‘lesson’ in a computer lab before with this class I
that, again, is the problem. Not with the program, but with the computers we were using.

C: Yeah, Well I haven't had much experience with PowerPoint, so I was very basic. But I feel very confident doing PowerPoint now. (laughing).

But, I've grown. The limiting aspects were you not being the one who knows how this is all meant to operate.

B: The fact that they had other people that they could relate to, because they couldn't ask me all the time because I had 31 in the class. So, having a masters group, the brothers group, really helped with that because, if I have to go to someone, they can all reinforce each other.

D: I think I'm now willing, and I mean, I was willing to use technology in the classroom to begin with a smile and say ‘whatever’ and I'll use it. I think, thought, I'm now more willing to use don't think I fully prepared myself to deal with the students.

C: Had big call on IT help for getting moviemaker up and running

C: feeling very inadequate technologically - unable to offer much in this area to help

A: I have began using technology differently. Rather than seeing it is a new way of learning, I have started using my normal teaching techniques and introducing them into this new environment.
the one-to-one. I wasn’t too keen on that.

D: Not going to say I’m loving it. If I said I love it, I’d lie to you. But I’ve gotten more willingness to implement it.

**PEDAGOGY**

B: To be quite honest, I probably found myself being a learner for the first time in the classroom, instead of the sole teacher. So, I’d say that now it’s 70% learning and 30% teaching because I was having to listen and find information quickly and find solutions to things, in content, as well as the technology. And the technology made that happen, but I found that I had to have answers or I had to make answers that made sense to the boy, rather than just the pat things that you say to a whole group, which half of them don’t understand. So, because you’re faced with a 1:1 situation with a kid who’s asking this question, even if it was content or technology, you had to learn quickly how to adapt to his need.

A: It was easier to orientate the students by holding group meetings at the beginning of every lesson. All students became immediately aware of what was required of them as students, and they were able to fill in the gaps in their knowledge by consulting with the groups that they are currently working with.

B: My contribution was supportive to the teachers and listening and responding to the
A: The socialization of the peer group working together was a big pedagogical change... I haven’t seen that work to that degree before in a normal classroom scene where we weren’t using ICT integration

B: I wanted the kids to become self-directed learners and I saw that happen. The shift towards self-directed learning in the A-stream class happened almost universally... I wanted them to own it and run with it. ... I don’t see myself as being as teacher directed as I was beforehand. So it has, yeah my role has changed a little bit. Is it because of technology? Probably, yes, I would say so.

A: The way I teach that class is different to the way I teach every other class. It’s different to the way I taught Year 9 English in the past. So I guess it is. Yeah, it has to be, because of some changes in the technology.

B: I found I had to be more adaptive when the technology I had chosen did not work and to realise that the same 'brothers' group while allowing them to lead/find their own solutions to the problems. My own role seems to be more supportive to students and guiding by directing students back to the instruction sheet on the web site, telling them to ask their 'brother' for help before asking me, and reassuring boys by praising their responses to the content and asking questions of students as to what they mean by their responses and asking them to be clearer in their meaning.
A: Style of teaching is completely
different. It is usually teacher directed,
and changing to a student directed,
system of learning is a big change. It's
massive. And it's sometimes difficult to
get used to.

A: Where you don't have that complete
control of your class, you need to step
back a little bit and give the
opportunity to do their work at their
own pace, in their own way. And that
can be difficult at times. Uh, facilitating
is good, except ... (laughing). I mean,
it's an easy role to adopt, unless you
have the mass amount of problems that
you sometimes do, with technology.

D: it's a valuable tool, pedagogically to
use, like, a primary classroom situation
for some things. But other things it
didn't.

A: As far as teaching strategies, I mean,
being facilitative, with new content is
not the most effective way, perhaps. In
educational ends and
curriculum needs could
be met by using simpler
devices e.g. power point
instead of Prezi and a
Word Document
compilation where
necessary - the content in
this case was more
important than the
vehicle although boys
who presented with Prezi
were more effective in
conveying their message
from their poetry devices.

C: changes in my normal
teaching practices: in
setting up stage very
reliant on students who
knew what to do better
than me, dynamics of the
computer lab, rather than
a standard classroom
changes how I see
students
some cases, with new content, you need to do some traditional chalk and talk. That's didactic? But I did find that taking them outside of that environment, having those team meetings, getting them to write down was a little bit more effective, and that was a change I made at the beginning of the unit. But I'd like to see it in a normal classroom.

A: I think they see their computers as a separate part of their life. Rather than just being another instrument like a pen and paper. And once we start changing that mentality, we'll change the way they use their computers

B: I found the group work was the biggest pedagogical change, in my group. I'm not talking about the culminating activity with the movie maker. But when you go back into, they had select a poetic device and work on it, and work on their own PowerPoint or Prezi and then share it with the others; there was a lot of going to and

C: I was far more stressed after this lesson then I have been all year with regards to this class. I have realised that I have to adopt different strategies with regard to instruction and classroom discipline in future lessons. Having never taken a ‘lesson’ in a computer lab before with this class I don't think I fully prepared myself to deal with the students.

C: I'm feeling very inadequate technologically - unable to offer much in this area to help the groups but helped boys think of suitable images to search for/ footage to take to enhance their presentation, so mainly a
A: The teamwork was quite effective and one of the highlights of the project. Like Teacher D was saying before there were a few passengers.

D: I found myself in the groups saying, okay, now show me which part you did. And so, when we appointed a group leader, the group leader had to initial what each person did to contribute to the group. So that pedagogical strategy, I think, helped make sure that everybody contributed. So one boy, who shall remain nameless, he got an E for his contribution on the movie maker. Because he, all he contributed was the title. He did the title page. That's all he did. Um, whereas other boys could ... And, they divided up guiding role with lots of confirmation to think for themselves a little more.

C: boys were in control and room given to be as creative as they wanted(from the bare minimum to those who wanted to push their skill a bit more)

A: It was easier to orientate the students by holding group meetings at the beginning of every lesson. All students became immediately aware of what was required of them as students, and they were able to fill in the gaps in their knowledge by consulting with the groups that they are currently working with.
their tasks. They just say, you're going to do this, in groups of 4, this is what each of you have to do. Come back and then they put it together. So, I think pedagogically probably it's part of getting used to group work. How you actually work a group. I talked that through.

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<tr>
<th>CONTENT</th>
<th>B: I found, like, with their created poems, the poems that they created at the end were certainly a reflection on the poems that they chose at the beginning part of the course and I found that application of the one that they had done, whether it was simile, metaphor that was very well done.</th>
<th>A: The content of the lessons engaged most learners in my classroom in a suitable way, as it enabled them to use the knowledge that they gained in Year 8 English in a more effective way.</th>
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|  | B: For me, (technology) worked better than with some of the stuff that I'd done previously when I had that advance level, before in Year 9, with poetry. But, I think this group, the work that they produced at the end, was much more inspirational, much more startling, much more diverse, because it | B: Most boys were able to engage with the content with some understanding but needed to be directed to reread the instructions to follow the process of analysis and interpretation.  ‘Summer
was in the topic range that they’d been engaged with in their choices of poetry, and what they’d done with the simile and such. And there’s a lot of correlation between what they had chosen in their research, and what they produced at the end ...

D: What you’re saying is that the culture of the use that they developed of the use of computers, particularly for the lower learners, was that of plagiarism because of copy and paste?

A. Feedback is delayed. So, normally in the classroom situation we walk around and see what’s happening and give instantaneous feedback. ..I think as a learner, it needs to be an instant feedback for it to be effective. B. My experience with that is that I walked around the room and was giving feedback as they were working on the screen ... And then gave them feedback on what they put on CLC.

Rain’ appealed to the visual learners but introduced a degree of difficulty while Flanders Field needed considerable google searching to ascertain meaning but most students naturally used google search to find the answers to the analysis questions and others followed suit when they realised others were using google to find answers. Many boys were not initially confident in their own interpretation but when reassured that if they could justify their interpretation with evidence from the poem, they wrote innovative meanings

C: success: boys were in control and room given to
B: So I think, in having to help another, and because one boy helped another with technology, that boy would continue to be helped also with poetry. There was a correlation between the two.

be as creative as they wanted (from the bare minimum to those who wanted to push their skill a bit more) ineffective: some boys frustrated by others in group not pulling their weight and so felt pressured to pick up the slack to get the task to the standard they were happy with

C: most successful of the tasks - all groups seemed to work well as a whole in the end and the boys could see something that they were ultimately responsible for. A lot of students mentioned how much ‘fun’ this task was

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B: I expected this week to
be tougher and it was as
the content was harder
and the level of computer
usage increased but
students seemed to step
up and no one in the class
gave up or tried to avoid
the work. There was
some loss of
concentration as boys
omitted to follow the
instructions on the web
site or lost the thread of
what was required however, those around them directed them or they asked for direction from me and got on with the work. Level of engagement continues to be high - I never hear from most of the boys as they just go to the computer and do their work.

| Collegiality | C: I found the support given us was fantastic and I wouldn’t have got through without it. Like, you know, I could annoy Teacher A having him there next door was fantastic. And then ITHEAD was only a phone call away. That made life easier. At one stage I rang the English HOD up and screamed ‘help me, help me.’
B: ...probably a reflection that maybe we need to do more lead up training in terms of the programs rather than as |
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<td>A: I had limited involvement with other teachers this week. Most teachers seem to be simply getting on with the job and do not require additional support this week. HOD English met with me quickly on Friday and discussed the process that the students needed to use to move their blogs into the correct place so</td>
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we go and that's probably a truism that comes out of this. And being time poor is obviously a problem because we've been talking informally in corridors rather than having to find specified time so we could do it. So, that structured discussion and support probably would have been helpful if we had planned that.

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<th>that they were accessible. We agreed that the best course of action would be to send other students over early next week so that they are the teachers.</th>
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<td>B: Interaction with other teachers this week was checking where everyone was up to and finding that others were progressing slowly but seeming to gain in confidence with the technology and the content. There were several discussions with individual teachers about the nature of behaviour control and student conduct in the computer room. I suggested to some that the team meeting idea might work in terms of controlling student behaviour and being</td>
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<td>Relationship to students</td>
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have to go to someone, they can all reinforce each other.

D: It's a self-realization thing, though. Those kids who didn't know they could do it, realized they could. So they had some beginning skills there.

B: One thing I found was that probably I developed trust, in terms of trusting the boys, in terms of what they were doing; trusting that they were on a pathway that I could change if I needed it to.

B: So, there were very interesting conversations and relationships that developed and a stronger relationship developed with the boys. My top boy said it was the best experience he had. He was very happy to work with others. And I was happy to use them in the classroom as a co-teacher. So I was becoming a co-learner, but also they've been becoming co-teachers. That was sort of like an egalitarian relationship that was quite challenging at times,
because you can’t give them too much power or authority, you have to retain that.

APPENDIX 3:

This attachment, The Year 9 Online Poetry Unit, contains three sections designed to be delivered online:

**Section 1**: Introduction to Poetry

**Section 2**: Poet Laureate for a Term

**Section 3**: Seeing Poetry

APPENDIX 4:
This attachment contains combined and individual class graphs using bar graphs to indicate combined and individual class raw scores and percentages in response to questions 1 – 7 in the student surveys. The attachment contains:

- **Sheet 1**: Graphed data of scales 1-5 (called gradients 1-5 in the graphs) for questions 1 – 7 for all classes
- **Sheet 2**: Grouped frequency raw score and percentage distribution for questions 1 - 7
- **Sheet 3**: Graphs of individual classes grouped according to responses to each of the seven questions as well as graphs of individual class percentage gradient frequency comparisons of questions 1 - 7