Using an online Learning Management System to personalise learning for primary students.

A descriptive multiple case study

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Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

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Date: 12th December 2013

Abstract

Personalising learning, digital technologies and Learning Management Systems are 'hot topics' in education in 2013. Learning Management Systems, hereafter referred to as an LMS, can personalise learning by encouraging teaching approaches that hold the student at the centre of the learning process (Seiler, as cited in Interface Magazine, 2009). However, there is little accessible research about how the LMS has been utilised in schools (Watson & Watson, 2007), especially primary schools, with some educators questioning the role that the LMS has to play in today's schools (Downes, 2005; McLoughlin & Lee, 2008).

This descriptive multiple-case study set out to explore the role of an LMS in personalising learning for students from the perspective of three primary school teachers. The intention was to provide insight into the role an LMS could play in classrooms when personalising learning. However, it became more about exploring the components of personalising learning and how this transferred into the LMS. The research project involved gathering multiple sources of data from interviews, observations and documentary information from the LMS.

The findings from this research suggest that an LMS has the potential to be a key part of a primary classroom environment which is built on the components of personalising learning. The degree to which personalising learning occurs is dependent on the teacher's overriding pedagogy, knowledge and understanding of personalising learning, school constraints and the perceived capacity of students to be independent learners. For the teachers in this project, personalising learning involved: (a) learning built around assessment for learning pedagogy, (b) a highly-structured approach to learning and teaching that places the needs and interests of students at the centre of learning, (c) learners informed and empowered through student choice and student voice, (d) a core curriculum of literacy and maths and (e) KnowledgeNET (the LMS at the centre of this study) as a tool to support learning. The findings highlight the interconnected nature of personalising learning pedagogy, an LMS and classroom practice.

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Abbreviations and acronyms

ACARA   Australian Curriculum, Assessment and Reporting Authority

AFL   Assessment for Learning

BECTA   British Educational Communications and Technology Agency

DfES   Department for Education and Skills (UK)

ERO   Education Review Office

ICT   Information Communication and Technology

IWB   Interactive Whiteboards

JISC   Joint Information Systems Committee

LMS   Learning Management System

MCEECDYA   Ministerial Council for Education, Early Childhood Development and Youth Affairs

MLE   Managed Learning Environment

NSCL   National College of School Leadership

NZQA   New Zealand Qualification Authority

OECD   Organisation for Economic Co-operation and Development

Ofsted   Office for Standards in Education, Children's Services and Skills

SMS   Student Management System

VICCSO   Victorian Council of State School Organisations

Glossary

21st Century pedagogy or future-orientated teaching and learning	The changing nature of education in light of the needs of students in today's world. Often described in terms of features or characteristics of what teaching and learning should encompass (Bolstad, et al., 2012).
Assessment for Learning	Teaching and learning process based around interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go and how best to get there (Assessment Reform Group, 2002).
Decile Rating	A school's decile rating indicates the extent to which it draws its students from low socio-economic communities. Decile 1 schools are the 10% of schools with the highest proportion of students from low socio-economic communities, whereas decile 10 schools are the 10% of schools with the lowest proportion of these students.
e-learning	Learning and teaching that is supported by or facilitated through the effective use of information and communication technologies (Ministry of Education, 2013a).
Feedback	Gaining information on performance or understanding.
Feed-forward	Gaining information to inform next steps.
Information and Communication Technology (ICT)	Any electronic or digital device used to access information or to communicate with others (Ministry of Education, 2013a).
Interactive Whiteboard (IWB)	A large interactive display that connects to a computer.
Learning Management System (LMS)	A component of an MLE. A secure online space of software tools and digital online content that controls much of the curriculum and pedagogical aspects of online learning within an MLE (Ministry of Education, 2012b).

Managed Learning Environments (MLE)	A collection of software tools and digital content that supports learning. It is made up of a Learning Management System and a Student Management System. (Ministry of Education, 2012b).
Modelling Book	Linked to teacher modelling. As they do the 'showing how', teachers often record the ideas and strategies in big books as a class resource of modelling activities, for children and teachers to revisit.
Pedagogy	The art and science of how something is taught and students learn it.
Personalising Learning	"High expectations of every child, given practical form by high quality teaching based on a sound knowledge and understanding of each child's needs" (Milibrand, 2004, p. 8).
Student Choice	Choice in the mix of ways in which student needs might be met (Leadbeater, 2004b).
Student Management System (SMS)	A component of an MLE. Controls the administration and management of student and staff information (Ministry of Education, 2012b).
Student Voice	Listening to and acting upon what students say (Hargreaves, 2006).
Te Marautanga o Aotearoa	Curriculum document for kura Māori-language immersion schools and Māori-medium schools. It is in te reo Māori (the Māori language) and stands alongside the national school curriculum.
Ultra Fast Broadband (UFB)	Internet services which deliver access speeds, in excess of 25 Mbps (Crown Fibre Holdings Limited, 2013).
Web 2.0	Term describing a second generation of the World Wide Web, that enables sharing, communication and information discovery (McLoughlin & Lee, 2008).

Chapter 1 - Introduction

1.1. Introduction

The potential of Information and Communication Technology, henceforth referred to as ICT, to revolutionise schools and classrooms in light of the needs of students in today's world has been well documented over the past decade. Researchers such as Bolstad et al. (2012) and Newhouse (2002a, 2002b) outline key principles for reshaping education for 21st century learning, or as it is more recently referred to, future-orientated teaching and learning. These principles revolve around the need for education to be learner-centred (personalising learning and rethinking the nature of learning); knowledge-centred (developing learning capacity and addressing the changing nature of knowledge); assessment-centred and community-centred (fostering new views about equity and diversity and developing new kinds of partnerships and relationships). Garrison and Anderson (2003, p. 52) believe that it is inevitable that e-learning will "transform all forms of education and learning in the twenty-first century" (p. 52), noting that educators ignore it at their peril.

Personalising learning, one feature of future-orientated teaching and learning, is enhanced through the use of digital technologies (Conole, 2010b; C. Robinson & Sebba, 2010). The New Zealand Ministry of Education[1], in showcasing their commitment to developing a 21st century learning environment that is future-orientated (Bolstad, et al., 2012; Ministry of Education, 2011a; Wright, 2010), supported the provision of Managed Learning Environments (Seiler, as cited in Interface Magazine, 2009; Ministry of Education, 2012b). The LMS, one part of a Managed Learning Environment, has the power to personalise learning by encouraging teaching approaches that hold the student at the centre of the learning process. These processes are based on constructivism[2], are underpinned

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[1] Government department responsible for the education system in New Zealand.
[2] Students actively involved in the process of creating their own knowledge and understandings.

by assessment for learning principles and encourage collaboration, while also taking advantage of evolving digital technologies (Seiler, as cited in Interface Magazine, 2009; Ministry of Education, 2012b; Watson & Watson, 2007).

1.2. Rationale for the research project

Researchers (Bolstad, et al., 2012; Newhouse, 2002a, 2002b; Underwood, et al., 2007) have found gaps between what is happening in the classroom and the features of future-orientated learning and teaching. Bolstad et al. (2012) indicates that further research is needed as there is "insufficient knowledge about how ICT related thinking and practices can be more consistently connected with the 'big picture' ideas about future-orientated teaching and learning" (p. 57). Research is essential in addressing the disparities that exist between the potential of e-learning and actual practice (Kirkwood, 2009).

Simultaneously, there is little accessible research about how the LMS has been utilised in schools (Watson & Watson, 2007), especially primary schools, with some educators questioning the role that the LMS has to play in today's schools (Downes, 2005; McLoughlin & Lee, 2008; Wenmoth, 2007). This highlighted the need for further research around the features of future-oriented teaching and learning, such as personalising learning, and the role of ICT, such as an LMS, within such an environment.

1.3. Purpose of the research project

This research project sets out to explore the use of an LMS in a primary school, describing its role in personalising learning for students. In doing so, the research also explores components of personalising learning and how this transfers into the LMS. Researching how the LMS is used to personalise learning for students enables a picture of personalising learning to emerge, provides insight into the role an LMS can play in classrooms when personalising learning and adds to a small body of work around the role of the LMS in future-orientated classrooms.

1.4. Research questions

In order to meet the aims of this research project, the questions which guided the research were:

1. What does personalising learning look like in a primary classroom with a Learning Management System as a core component?
2. How are the teachers using a Learning Management System to personalise learning?

1.5. Structure of the thesis

Chapter One has provided an overview of the thesis. Chapter Two reviews the literature on personalising learning and the LMS, with particular attention given to developing a greater understanding of the role that an LMS plays in personalising learning. Chapter Three outlines the research paradigm, methodology and approaches that guided this research. The findings are reported in Chapter Four, focusing on the way that aspects of an LMS are being used by three teachers, and exploring its role in personalising learning for students. Chapter Five examines the findings, identifying the overriding themes that have emerged from the analysis of data, discussing the connection between classroom practice and LMS use. Chapter Six draws the thesis to a close by reviewing the major findings and discussing the implications of the study for teacher practice and future research.

Chapter 2 - Literature Review

2.1. Introduction

Research (Maharey, 2006; West-Burnham, 2010; Wolf, 2010) has shown that personalising learning is broadly endorsed as a key strategy to improving student engagement and academic achievement. Whereas some researchers, (Abbey & Baylis, 2011; Keamy, Nicholas, Mahar, & Herrick, 2007; Sebba, Brown, Steward, Galton, & James, 2007; Steigler-Peters & Schweer, 2011) consider personalising learning to be evolving, with limited evidence as to its overall success, other researchers (Keamy, et al., 2007; Wilmot, 2006) argue that there is substantial evidence of how many of the separate components of personalising learning have been successful in a variety of contexts. Meanwhile, researchers (Conole, 2010b; McLoughlin & Lee, 2008; Project Tomorrow, 2012b) claim that the key to effective personalisation of learning is to utilise digital technologies.

This literature review aims to provide the background to this research project, examining personalising learning in education and the role that the LMS plays in supporting personalising learning for primary school[3] students. This chapter is framed around five sections: personalising learning, personalising learning and technology, Learning Management Systems, an overview of research on LMSs and LMS use in schools to personalise learning. The chapter concludes with a summary.

2.2. Personalising learning

This section describes personalising learning. It outlines differing definitions and agreed components, describes the challenges of personalising learning, explains the rationale supporting personalising learning in education and portrays the situation in New Zealand.

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[3] Compulsory schooling for Years 1–6 (ages 5–11)

2.2.1. <u>A definition of personalising learning</u>

The precise terminology, personalised learning, personalising learning or personalisation, causes confusion for many educators and researchers as there are numerous terms evident in literature (Bray & McClaskey, 2013; Sebba, et al., 2007; Underwood, et al., 2007) with slight variations in the way they are defined. Sebba et al. (2007) argue that personalisation usually describes personalising public services in general, whereas when student learning is personalised, schools often refers to it as personalised learning. Hargreaves (2006), Wilmot (2006) and West-Burnham (2010) note that much of the literature talks about personalised learning as if it was something that can be done and completed. However, they maintain that personalising learning is the appropriate term as it refers to learning as an ongoing state, not a product. In New Zealand, Maharey (2006) prefers the term personalising learning, seeing it as an active process.

The most common element of a personalising learning definition refers to an education system focused on learning which is tailored to the needs, attitudes and interests of every learner. The learner is at the heart of the process, and as such, the corresponding education system supports the growth of the whole child, ensuring that every student achieves their highest possible standard (Abbey & Baylis, 2011; August, et al., 2007; Fink, 2005; Keamy, et al., 2007; K. Robinson, 2010; Steigler-Peters & Schweer, 2011; West-Burnham, 2010; Wolf, 2010). An often quoted definition on personalising learning comes from Milibrand (2004, p. 8), who refers to it as, "High expectations of every child, given practical form by high quality teaching based on a sound knowledge and understanding of each child's needs". This appears to be an accepted definition as it is evident in a range of literature on personalising learning (Besley & Sokoloff, 2004; Hargreaves, 2004; James, Blatchford, Ruddock, Hughes, & Sutherland, 2004; Keamy, et al., 2007; Sebba, et al., 2007; Wilmot, 2006). However, Hargreaves (2004) cautions educators to be open to a changing definition of personalising learning as it becomes increasingly woven into practice.

Personalising learning is not the same as free-for-all-learning where pupils are left to their own devices or individualised learning, separating students to learn on their own (Milibrand, 2004, 2006; National College for School Leadership, 2005; Treadwell, 2008; Wolf, 2010). Bray and McClaskey (2013) explain how the differences between personalisation, differentiation and individualisation is focused around who is in control of the learning. The key difference being that the student drives the learning when it is personalised, whereas the teacher drives the learning when it is differentiated or individualised.

Evidently, there are a number of terms and definitions linked to personalising learning, yet the focus on the student at the centre of the learning process is a common feature for all. Throughout this thesis, 'personalising learning' is the term used by the researcher as it reflects the situation in New Zealand and encompasses the researcher's belief that learning is an ongoing process.

2.2.2. <u>Components and features of personalising learning</u>

Research describing personalising learning highlights a number of components and related features. Five core components common to the essence of personalising learning have emerged from a synthesis of local (Bevan-Brown, McGee, Ward, & MacIntyre, 2011; Maharey, 2006; Treadwell, 2008) and international literature (Abbey & Baylis, 2011; August, et al., 2007; Besley & Sokoloff, 2004; DFES, 2008; Hargreaves, 2004, 2006; Hopkins, 2006; James, et al., 2004; Keamy, et al., 2007; Leadbeater, 2005a; NZCL, 2005; Rudduck, Brown, & Hendy, 2006; West-Burnham, 2010; Wilmot, 2006; Wolf, 2010). These components comprise: assessment for learning, curriculum entitlement and choice, effective teaching and learning, strong partnerships and schools as learning organisations.

Deeper analysis of this literature resulted in the identification of a number of specific features, which underlie these broader components. Figure 2.1 illustrates the broad components of personalising learning and the associated specific features as derived from personalising learning literature. Many of these

School as a learning organisation
- Student-centred approach to school leadership
- Leadership and management focus on teaching and learning and how to bring about high quality teaching and learning
- Buildings and resourcing and facilities support personalising learning
- Focus on improving student outcomes for all

Assessment for Learning
- Student focused learning
- Use of rich evidence and dialogue to identify learning needs, set targets/goals and next steps, plan learning and monitor progress - by student and teacher
- Effective pupil grouping - planned, flexible
- Purposeful
- Differentiated instruction to meet all students' needs.
- Insightful reflection – justify, answer, explain
- Effective feedback to the learner

Curriculum entitlement and choice
- Breadth of study; greater choice
- Flexible learning pathways /tailored curriculum to meet needs of all students
- Student choice and voice
- Flexible learning environments
- 'Age' not 'Stage' approach
- Enriched real-life opportunities and challenges
- Purposeful
- Focus on progress
- Open-ended tasks

Personalising learning
Core components and specific features

Effective teaching and learning
- Use of a variety of high quality teaching and learning strategies that engage and stretch learners
- ICT across the curriculum - personalised, flexible learning space beyond the classroom walls.
- Learning how to learn - lifelong learners
- Open communication around learning
- Student ownership of learning – co-creator and control
- Students are active participants in learning
- Focus on individual's potential
- Build on students prior learning – connections
- Collaborative relationships
- Teachers as facilitators of learning

Strong partnerships
- Parental involvement and open communication around learning and progress
- Learning in community context
- Networks and collaboration
- Live locally, learn globally
- Support for student from all agencies around their well-being and progress - team up, share information, work together
- Mentoring
- Understanding of the student - where they 'come from' and what drives them
- Build inclusive learning communities

Figure 2.1: Components and specific features of personalising learning

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specific features are interchangeable within a number of components, but for the purpose of this review were classified under one broad component. The exact phrases used by individual researchers to describe these components and/or the corresponding features vary.

Whilst there are a variety of terms used to label the process of personalising learning, the literature shows some common key components and specific features which are apparent when personalising learning in the classroom. The next section discusses the challenges schools and teachers face when personalising learning.

2.2.3. Key challenges when personalising learning

Changing school culture, the prescribed curriculum, student choice and teacher skill-set have the potential to challenge the success of personalising learning in education. The biggest barrier, according to Demski (2012), is that of cultural change and getting 'buy-in' from the key stakeholders in the learning process. This is especially difficult Demski (2012) believes, as they have been a product of the industrial model[4] of education themselves. It is challenging for teachers and schools to move away from the 'control' culture of education towards a constructivist, learner-centred approach. Leadbeater (2005) notes that the tendency to pull back to old ways is strong.

Hastings (2008) argues that the prescriptive curriculum and the accompanying assessments are another barrier to personalising learning. The prescribed curriculum, which dominates many education systems, denies students choice and autonomy for sharing their learning pathways (Aslan, Huh, Lee, & Reigeluth, 2011; Conole, 2010b; Green, Facer, Rudd, Dillon, & Humphreys, 2005; McLoughlin & Lee, 2008; C. Robinson & Sebba, 2010). Research conducted by Green et al. (2005) showed that:

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[4] Traditional system of education, based on delivering uniform instruction to large numbers of students.

> *The idea of personalisation is familiar and is one of the ideals that brought them* [teachers] *into the profession. However, at times, the assessment, funding and institutional contexts in which they operate act not as a driving force for personalisation but as a barrier to it. Personalisation asks us how these systems can be re-shaped around the needs of the learner.* (p. 3)

The challenge for teachers is the degree to which they are able to personalise learning within the constraints of a system not necessarily designed to achieve this (Bolstad & Lin, 2009).

Student choice, a specific feature of curriculum entitlement and choice, comes with its own challenges. Prain et al. (2013) argues that the degree to which student choice is desirable or necessary to the provision of personalising learning is unclear. Leadbeater (2005) and Campbell et al. (2007, as cited by Prain, et al., 2013) caution educators about the potential of student choice to be exploited by the most advantaged in society, as self-regulation and self-motivation are not equally dispersed across society. Too much student choice could lead to bewilderment, anxiety and confusion for students (Leadbeater, 2005), challenging them to make informed choices about their learning (Prain, et al., 2013).

The time-consuming nature of personalising learning challenges teachers. Researchers (Bolstad & Lin, 2009; Reigeluth, et al., 2008) claim that the amount of work required to tailor and manage the learning experiences to fit the needs of students can seem unmanageable. In contrast, Reigeluth and An (2011) showed that only a few teachers thought that personalising learning approaches were time consuming.

Lastly, some researchers (An & Reigeluth, 2011; Prain, et al., 2013; Wolf, 2010) believe that challenges exist as personalising learning approaches rely on the skill-sets of teachers. They argue that teachers need to have a flexible teaching style, taking on the role of facilitator, which in many cases involves changing the way they interact with students, and tailoring learning for students.

The literature reviewed in this section exposes a number of challenges to the effective application of personalising learning in the classroom. However, in spite of these challenges, many researchers see personalising learning as important in education today to enhance the learning of students.

2.2.4. <u>Personalising learning – A catalyst for educational reform</u>

The concept of personalising learning has been slowly evolving and gathering momentum since it emerged in the late 1980s (Abbey & Baylis, 2011; Green, et al., 2005; Project Tomorrow, 2012a; Wolf, 2010). Teachers and schools have attempted to design their teaching to meet the needs of students, with varying degrees of success (Besley & Sokoloff, 2004; Green, et al., 2005; Hargreaves, 2004; McLoughlin & Lee, 2008; Milibrand, 2005; Project Tomorrow, 2012a; Treadwell, 2008; Wilmot, 2006; Wolf, 2010). However, personalising learning as a catalyst for system-wide reform is a new concept (Keamy, et al., 2007; Leadbeater, 2005), spurred on by the potential role digital technologies can play (Conole, 2010b). Researchers (Abbey & Baylis, 2011; August, et al., 2007; Besley & Sokoloff, 2004; Fink, 2005; Leadbeater, 2005; Wolf, 2010) argue that surface changes to the current system will not produce the results that are being sought by education systems. Robinson (2010) agrees, believing a revolution in education is needed.

The call for system-wide reform, built around personalising learning, is based on a range of specific reasons discussed in literature. Firstly, it is a response to the challenges of living and working in a changing society and overcoming social and economic disadvantage and underachievement by disadvantaged groups (August, et al., 2007; Hargreaves, 2004, 2006; Leadbeater, 2004b; K. Robinson, 2013; West-Burnham, 2010; Wolf, 2010). Secondly, it is a reaction to an increased awareness that the traditional system of education, based on delivering uniform instruction to large numbers of students, is not meeting the needs of individuals or society (Abbey & Baylis, 2011; Hopkins, 2006; Keamy, et al., 2007; Organisation for Economic Co-operation and Development, 2006; K. Robinson, 2010; Rudduck, et al., 2006), nor is it addressing the changing nature of knowledge and learning (August, et al., 2007; Conole, 2010b; Gilbert, 2005;

Hopkins, 2006; Maharey, 2006; National College for School Leadership, 2005; Whitby, 2007). Lastly, and most relevant to this research project, personalising learning capitalises on digital technologies and how they can be personalised to address the needs of individual learners (Abbey & Baylis, 2011; Conole, 2010b; Hopkins, 2006; James, et al., 2004; Project Tomorrow, 2012a; K. Robinson, 2010; Victorian Council of State School Organisations, 2013; Wolf, 2010). This final reason is discussed in some depth later in this chapter.

A number of education systems around the world acknowledge the potential of personalising learning. This is evident in government reports, curriculum documents and/or policy programmes in Australia (Australian Curriculum Assessment and Reporting Authority, 2013; Keamy, et al., 2007; Ministerial Council on Education Employment Training and Youth Affairs, 1999; VICCSO, 2013), England (August, et al., 2007; Department for Children Schools and Families, 2008; Department for Education and Skills, 2004; United Kingdom Department for Education, 2013), the United States of America (Association for Supervision and Curriculum Development, 2007; Project Tomorrow, 2012a, 2012b; Wolf, 2010), Canada (Ministry of Education - British Columbia, 2013) and New Zealand (Bolstad, et al., 2012; Education and Science Comittee - Fiftieth Parliament, 2012; Maharey, 2006; Ministry of Education, 2007).

It is clear that whatever the catalyst, national bodies have identified the importance of personalising learning. The next section explains the current situation of personalising learning in New Zealand.

2.2.5.   Personalising learning in New Zealand

Personalising learning in New Zealand is in a state of flux. It gained some momentum in 2006 as a way of lifting student achievement with the publication of *Let's talk about personalising learning* (Maharey, 2006). This publication was supported by a move to a student-centred curriculum, the revised New Zealand

Curriculum[5] (Ministry of Education, 2007), and an investment in professional development for teachers.

Bevan-Brown et al. (2011) investigated personalising learning practices in New Zealand schools. They found that most schools recognised personalising learning as valuable, describing many ways of effectively personalising learning, yet wide variations in the depth of understanding around it were evident. Some respondents felt that personalising learning had lost popularity and was no longer advocated by the Ministry of Education as an effective learning approach.

However, various Ministry of Education publications outline components associated with personalising learning. A recent report to the New Zealand Parliament (Education and Science Comittee - Fiftieth Parliament, 2012) highlighted the need for a personalised approach to learning. The report emphasised the need to embrace student-led inquiry and to enable students to have control over their learning while making use of the Internet.

The New Zealand Qualifications Authority (NZQA)[6] has highlighted the need to change the current qualifications system. Poutasi (2013), Chief Executive of NZQA informed the Secondary Principals' Association of New Zealand[7] that increasing individualisation is the vision of the organisation for the next 10 years. The future focus is on principles which link learning closer to assessment, provide opportunities to personalise learning and enable students to take responsibility for learning. This move reflects the Ministry of Education's (2011c) Statement of Intent 2012-2017 which emphasises the importance of the learner and the need to develop a 21st century learning system. Underlying each of these recent publications are the key components associated with personalising learning, emphasising its growing importance within New Zealand education policy.

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[5] Provides schools with direction for teaching and learning. Revised in 2007.
[6] A board, appointed by MOE, responsible for maintaining the New Zealand Qualifications Framework .
[7] New Zealand Association for Secondary Principals

Analysis of the literature shows that while there are a variety of terms and interpretations used to label personalising learning, there are also some agreed components: assessment for learning, curriculum entitlement and choice, effective teaching and learning, strong partnerships and schools as learning organisations. Personalising learning with the use of digital technologies is seen as a way to open up new ways of thinking (Conole, 2010a) and as a solution to some of the issues that concern educators today.

2.3. Personalising learning and digital technology

This section investigates the role of digital technologies to support personalising learning and identifies challenges teachers face when doing so.

2.3.1. Rationale for use of digital technologies to personalise learning

Significant advancements in digital technologies over the past 10 years have provided new tools for teachers and students to utilise to personalise learning (British Educational Communications and Technology Agency, 2008; Demski, 2012; Green, et al., 2005; Project Tomorrow, 2012a; VICCSO, 2013; Watson & Watson, 2007; West-Burnham, 2010). The literature highlights the way students are utilising digital technologies outside of the classroom and the increased learning opportunities ICT opens up to support AFL principles, as reasons for the importance of digital technologies to personalising learning.

One rationale for personalising learning with digital technologies is that students are already creating personalised learning environments for themselves outside of school and so should have these same opportunities at school (Green, et al., 2005; Project Tomorrow, 2012a, 2012b). In personalising their learning outside of schools, students are using Web 2.0 tools such as message and discussion boards to explore new ideas about their world, online collaboration tools (such as wikis, blogs) to share their knowledge with others, and web tools to create alerts or notifications for self-organisation or collaborative writing (Project Tomorrow, 2012a). As a result, researchers (Project Tomorrow, 2012a, 2012b; Steigler-

Peters & Schweer, 2011) question how the current education system is utilising digital technologies to create personalised learning experiences for students.

Digital technologies provide new tools and ways of working for teachers and students to utilise to personalise learning. These tools support assessment for learning principles, hereafter referred to as AFL, enabling teachers to identify and manage the needs of many students, tailor content and resources for individual students and access a large variety of interventions, content, resources and learning opportunities everywhere at any time (Abbey & Baylis, 2011; BECTA, 2008; West-Burnham, 2010; Wolf, 2010). Learners using technology have greater choice and control over their learning programmes, and are able to adapt the pace and depth of study (BECTA, 2008). Educators, such as Greaves (Demski, 2012) and Green at. al (2005) go as far as to say that personalising learning cannot happen effectively without the right technological tools in place.

2.3.2. Use of digital technologies to personalise learning

Digital technologies provide new tools and ways of working for teachers and students including the potential to personalise learning for students. However, how these technologies transfer into the classroom is hard to determine as there is limited research available and mixed results have been reported. Robinson and Sebba's (2010) research found that learners who had access to digital technology were sometimes given an opportunity to lead and influence learning. Specifically, they found that activities were learner influenced after the teachers had suggested, set-up or initiated the activities. In other words, students had more responsibility for decisions within the confines of the activities. Underwood et al. (2007) also found that the teacher's role in developing a personalising learning culture can be enhanced through the use of ICT with allowing content choice as the most frequent way of personalising the learning experience. However, they noted that personalising learning does not require ICT but when they are used together there are beneficial effects. Project Tomorrow (2012a) argues that in limiting students' ability to choose the technology they would like to use, schools are limiting the potential of personalising learning.

The next section examines the challenges that teachers face when utilising digital technology to personalise learning.

2.3.3. Key challenges when personalising learning with digital technology

Changing teacher roles and unclear performance benefits of ICT challenge the success of personalising learning approaches which use digital technology. The challenges outlined in this section do not encompass all challenges that teachers face when using technology in the classroom; they are the particular challenges acknowledged by researchers investigating personalising learning using digital technology.

As outlined in Section 2.2.3, personalising learning requires a change in thinking about the way that schools function and a certain skills-set for teachers. The array of Web 2.0 tools have added to this phenomenon as they have precipitated the move away from the teacher as the 'expert', opening up opportunities for students to access a wide array of knowledge on their own (Conole, 2010b). Robinson and Sebba (2010) conclude that personalising learning is more likely to occur if teachers possess high quality digital technology skills, have an interest in technology and allow their students to be actively involved in decisions about their learning. Conole (2010b) notes that many teachers are overwhelmed and confused by the range of technology and the best ways that they can be used to support learners.

Lastly, while digital technologies have an increasingly important role in education, e-learning research has been unable to demonstrate clear performance benefits in terms of learning outcomes. Researchers (Ministry of Education, 2012a; Wright, 2010) claim that there is a growing body of evidence which supports the view that e-learning has the potential to improve student outcomes and have a positive impact on the learning of students. However, other researchers (Crook, Harrison, Farrington-Flint, Tomás, & Underwood, 2010; Higgins, 2003; Nichols, 2008) warn that it is difficult to generalise about student

experiences with e-learning as so much depends on the pedagogical mix that is used.

The research reported in this section outlines how students are utilising digital technologies outside of the classroom and the alternative ways of working which ICT tools encourage. These highlight the important role digital technologies have to play when personalising learning. However, performance benefits of digital technology use are often unclear. Educators face many challenges using ICT and there is limited research in this area. Overall, further research is needed into how digital technologies are used in the classroom to support personalising learning approaches.

One digital technology presented as a tool for personalising learning is a Learning Management System (Britain & Liber, 1999, 2004; Miranda, 2011; Watson & Watson, 2007).

2.4. Learning Management Systems

This section examines Learning Management Systems. It describes where the LMS fit within a Managed Learning Environment, presents a definition, explains the defining aspects of the LMS, identifies the advantages and limitations and outlines the current use of LMSs in New Zealand.

2.4.1. Managed Learning Environments and Learning Management Systems

An LMS tends to sit within a school's Managed Learning Environment, hereafter referred to as the MLE. The Joint Information Systems Committee (2012) views the MLE as "a conceptual term for a range of software, systems and processes that interrelate, share data and contribute to the management of the learning experience". There are no clear, established guidelines as to what is incorporated into an MLE as these depend on the school's vision (JISC, 2012). The vision for the components of an MLE in New Zealand schools is shown in Figure 2.3 (Ministry of Education, 2011b). The LMS is one small part of this environment.

What is a Managed Learning Environment (MLE)?

Software tools and digital content that support learning

Curriculum & Pedagogy

National curriculum

School curriculum incl. lesson plans

Learning Management Systems (LMS)

ePortfolios (record of learning)

Course Management Systems

Assessment tools

Planning tools

Communication

Blogs

Podcasts

Chatrooms

Noticeboards

Social networking

Discussion threads

Audio conferencing

Video/web conferencing

Enabling Services

Identity & Access Mgmt (IAM)

Single Sign On (SSO)

National Student Index (NSI)

Parental portal

Transport mechanisms

Metadata schema

Interoperability standards

Specifications

Shared content

Administration

Student Management Systems (SMS)

Student Record Transfer (SMS-SMS)

NCEA returns

Calendaring

Timetabling

eReturns

ENROL

Resources

TKI

Websites

Wikis

Digital Learning Objects

Library Management Systems

Content Management Systems

Authoring/publishing/editing tools

Other content sources (open access)

Figure 2.2: Core Components of an MLE

2.4.2. Learning Management System – A definition

A variety of terms and associated acronyms exist to label and describe related, but conceptually different, e-learning platforms which results in confusion for many people (BECTA 2003; European SchoolNet, 2003; JISC 2012; Piña, 2010, 2013; Piotrowski, 2010; Watson & Watson, 2007; Wenmoth, 2011). Some of these systems, Piña (2010) points out, may be used to describe different types of systems altogether or may be used interchangeably.

Confusion exists because there is no singular universally approved definition, (Piotrowski, 2010) due to the newness of e-learning research (Conole & Oliver, 2006; European SchoolNet, 2003), the ever-changing pace of technology, the continual evolvement of such e-learning systems (European SchoolNet, 2003; Nichols, 2008; Paulsen, 2003) and the use of different terms in different countries (JISC, 2012; Piña, 2010). Furthermore, Piotrowski (2010) argues, these complexities pose a problem for research and practice as there is no objective reference framework from which to describe, compare or evaluate systems.

However, for the purpose of this project, a Learning Management System has been defined by identifying the commonalities within the literature. Thus, LMS is an umbrella term used to describe one centralised cloud-based or server-based software program (Butakov, Solodky, & Swar, 2013; Ministry of Education, 2013b; Piña, 2013; Wenmoth, 2007) with the core purpose of enabling learning and teaching to occur (Butakov, et al., 2013; Ministry of Education, 2013b; Oakes, 2002; Piña, 2010, 2013; Watson & Watson, 2007). Furthermore, the LMS can interface with a database containing information about users, courses and content for administration purposes (Butakov, et al., 2013; Hall, 2003; Oakes, 2002; Piña, 2010, 2013; Wenmoth, 2007). Simply put, the LMS is an online program with a variety of aspects used to support teaching and learning.

2.4.3. Common aspects of a Learning Management System

Most LMSs have a range of common aspects used for specific purposes. Dabbagh and Bannan-Ritland (2005, as cited by Butakov, et al., 2013; Piña, 2010; Piña, 2013) identified four common aspects that set an LMS apart from other software systems namely: content creation and display tools, communication, assessment and administration tools. Content creation and display tools are used for generating course content using webpages for presentation, hyperlinks to websites and to upload files (Hall, 2003; Miranda, 2011; Nichols, 2008; Watson & Watson, 2007; Wenmoth, 2007). Communication tools support interaction and collaboration using threaded discussions, online discussions and email (Hall, 2003; Nichols, 2008; Siemans, 2004). Assessment tools test, survey and track student achievement and activities using tests, assessment and quizzes (Hall, 2003; Oakes, 2002; Watson & Watson, 2007). Administration tools are used to manage the settings within the LMS such as student tracking, creating users and accounts (Hall, 2003; Oakes, 2002; Watson & Watson, 2007).

The next section examines the advantages of an LMS and the potential limitations.

2.4.4. <u>Advantages and limitations of the LMS</u>

LMSs are constantly evolving, reflecting changes in digital technologies and in response to the explosion of Web 2.0 tools (Piña, 2010, 2013). Yet, LMSs have a number of advantages and limitations, which are either a result of the aspects available within the LMS or the way that the LMS has been used by teachers.

When used effectively, the LMS enables the development of personalised learning experiences for learners (Britain & Liber, 1999; Miranda, 2011; Oakes, 2002; Underwood, et al., 2007; Watson & Watson, 2007) which caters for multiple modes of learning (BECTA, 2003; 2004; Hall, 2003; JISC, 2012; Miranda, 2011) and supports improved communication and collaboration (Britain & Liber, 1999; BECTA 2004; JISC 2012; Miranda, 2011; Wenmoth, 2007). An LMS can also offer alternative assessment and tracking functionalities (BECTA 2003; Oakes, 2002; Watson & Watson, 2007) and support increased parental access and involvement (BECTA, 2003). Alternatively, one limitation of an LMS is that it can be used to replicate current teaching practice rather than opening up innovative and new ways of learning (Britain & Liber, 2004; Downes, 2005; McLoughlin & Lee, 2008). Some researchers are concerned that the LMS is based around managing learning (Siemans, 2004) or viewing learners as jars to be filled with content and knowledge (Camacho & Guilana, 2011; Downes, 2005; Piña, 2010, 2013; Siemans, 2004; Wenmoth, 2007).

Researchers argue that the LMS provides a consistent look and feel across the platform and is easy to navigate (BECTA, 2003; 2004; Piña, 2010, 2013). Other researchers contend that an LMS can have an ineffective and unengaging design which is disconnected from effective pedagogy (Britain & Liber, 2004; Piña, 2010, 2013) and can be dull and rigid compared to Web 2.0 tools (Britain & Liber, 2004; Camacho & Guilana, 2011; Nichols, 2008; Piña, 2010, 2013).

Researchers (Conole, 2010a, 2010b; McLoughlin & Lee, 2008) believe limitations outweigh the benefits and the introduction of Web 2.0 tools and open source software makes an LMS redundant. Conole (2010a, 2010b) and Atwell (2007,

2008) propose Personal Learning Environments (PLEs) as the new and improved alternative. While definitions of a PLE vary, it is agreed that it is a range of technological tools, used in everyday life, used to support learning (Conole, 2010b). Atwell (2007) argues that a PLE is not an application but rather an approach to using technology for learning. Unlike the LMS, that supposedly take a course-centric view to learning, the PLE is learner-centric and evolves at the student's pace (Downes, 2005; McLoughlin & Lee, 2008; Wenmoth, 2007).

Tension exists between 'personalised tools' provided by a PLE versus institutionalised tools found within the LMS. However, it is difficult to make an accurate comparison as much of the literature around LMSs is dated pre-2010 and does not necessarily reflect changes that have occurred within some LMSs since mid-2000s. As a result, some of the listed advantages and limitations may apply to the older style LMSs. The contrasting arguments emphasise the complex issues surrounding LMSs and the key that teachers hold in their effective use and implementation. This highlights the importance of schools having access to current research on LMS use, linked to sound pedagogy, to help them make decisions about LMS use.

2.4.5. Learning Management Systems in New Zealand schools

The Ministry of Education (2011b) is promoting the development and use of an MLE, of which an LMS is a small part, in New Zealand schools. Limited research is available about the use of LMSs in schools in New Zealand and is generally evident in reports on ICT usage and infrastructure (M. Johnson, Hedditch, & Yin, 2011; Schools Infrastructure Group, Ultra-fast Broadband in Schools, & Ministry of Education, 2013), theses (Benson, 2012; Stevens, 2011), Principals' Sabbatical Reports (Armitage, 2011; Fox, 2008) and informal case studies provided by the LMS vendors (e.g. http://knowledge-networks.co.nz/our_schools.php). Benson (2012) is the only New Zealand based research located for this review which contains findings that link LMS use to personalising learning.

The research reported in this section shows that the LMS is an online program with a variety of content creation and display tools, communication, assessment and administration tools, which are used to support teaching and learning. The research highlights the differing views around the relevance and use of the LMS in today's classrooms. The next section examines the current research on LMSs.

2.5. Current research on Learning Management Systems

This section discusses the relevant literature available about LMSs. It highlights the lack of current research on LMSs from a primary school perspective and from a pedagogical perspective. While LMSs have reached a high level of adoption in many countries, this is most evident in Higher Education institutions (BECTA, 2004; European SchoolNet, 2003; Office for Standards in Education Children's Services and Skills, 2009; Passey, 2010; Piña, 2010, 2013). Although this research project focuses on LMSs in primary schools, out of necessity, literature addressing Higher Education has formed the foundations of this literature review.

The transferability of much of the literature to primary schooling is questionable. Parkes, Zaka and Davis, (2011) when investigating online learning, highlighted the differing needs and characteristics of adult learners versus school students. In contrast, BECTA (2004) believe that, in many cases, there is potential applicability to the primary school sector as the benefits are transferable. Either way, BECTA (2004) and Watson and Watson (2007) argue, there is a real shortage of solid research around LMS use in the compulsory schooling sector and reveal that more large-scale classroom-based studies on the implementation of LMSs are needed.

As previously noted, an LMS has the power to personalise learning, yet very little research exists which investigates the implementation of an LMS within a school environment with a pedagogical focus on personalising learning. Much of the research around the LMS is clustered around LMS use, attitudes and effectiveness, in a general sense, rather than trying to understand how the LMS is utilised to support a particular pedagogical perspective. As a result, there is a need for

further research focused on how an LMS is scaffolded from a pedagogical perspective.

This section has highlighted the need for further research on LMSs, specifically from a pedagogical perspective. When considering earlier claims around the potential of personalising learning in education combined with the role that digital technology plays, the reasons for the project's focus on exploring LMS use as part of a personalising learning environment have been made clear. It is pertinent to examine what the available literature reveals about LMS use in schools to personalise learning for students. This occurs in the next section.

2.6. Learning Management System use in schools to personalise learning

This section examines what is already known about the way the LMS is used in schools to personalise learning. Firstly, research which specifically investigated components of personalising learning within an LMS were examined. Secondly, other LMS research was analysed and included if there was evidence of some of the components of personalising learning, as identified in Figure 2.1, within the research.

The section begins with an overview of the teacher's role in how an LMS is used in the classroom and concludes by examining the way LMSs are used in classrooms and schools to personalise learning.

2.6.1. <u>The teacher's role in personalising learning with an LMS</u>

The most common thread running through the research (Aslan, et al., 2011; European SchoolNet, 2003; Ofsted, 2009) was that the way that the LMS was used depended on how it was designed by the teacher (Aslan, et al., 2011; Bergen, French, & Hawkins, 2012; European SchoolNet, 2003; Johannesen, 2013; Ofsted, 2009; Snodin, 2013). Therefore, the degree to which an LMS is personalised (or replicated other teaching pedagogies) is dependent on the design. The combined research findings highlighted two noticeable trends. One trend revealed that the LMS structure supports teachers in replicating traditional modes of teaching in

the LMS (Aslan, et al., 2011; European SchoolNet, 2003) while the alternate trend showed that an LMS can open up new ways of teaching and learning (Bergen, et al., 2012; Johannesen, 2013).

The research highlighted how the LMS structure supports teachers in replicating traditional modes of teaching. For instance, research undertaken by European SchoolNET (2003), found teachers were using the LMS in a traditional way, replicating current classroom practice. Similarly, Ashlan el al. (2011) established that although some principles of AFL and customised learning were evident in some of the face-to-face classrooms in the schools they researched, it did not filter through to the way the LMS was used which was aligned with traditional modes of teaching. This evidence suggests that the LMS has the potential to support traditional modes of teaching.

In contrast, some researchers discovered that an LMS can open up new ways of teaching and learning. Research (Bergen, et al., 2012; Snodin, 2013) demonstrated how instructional and student-learning practices were changing as a result of opportunities provided within an LMS. Students were getting a richer learning environment and teachers were taking on a more facilitative role, which align with personalising learning components. While Johannesen (2013) noticed the LMS was used to assess traditional skills in new ways, teachers were also supporting innovative formative assessment practices, such as the digital portfolio, to support self-assessment and self-regulation. Underwood et al. (2007) found that an LMS could be used appropriately to support personalising learning, if it was evident in the classroom. However, only a minority of schools were able to do this and very little evidence was outlined within the report.

Researchers contend that the LMS both supports traditional modes of teaching and opens up new ways of working. However, each of these findings reinforces the role of teachers in determining how the LMS is used to support learning, in whatever form they wish it to take. It appears that personalising learning in an LMS is possible if the teacher has the skills, knowledge and desire to design it for this.

2.6.2. LMS use in classrooms to personalise learning

The research findings highlight that an LMS is used to personalise learning by addressing the following components of personalising learning: assessment for learning, effective teaching and learning and curriculum entitlement and choice.

Assessment for learning is one of the components that underpin personalising learning. Some researchers (Benson, 2012; Bergen, et al., 2012; Johannesen, 2013) refer to evidence of principles of AFL in their research around LMS use, showing that an LMS has the potential to support AFL practices and, indirectly, personalising learning. The AFL principles that came through the strongest were the ability to receive feedback and feed-forward (Benson, 2012; OFSTED, 2009; Snodin, 2013) and for students to use an LMS to assess, reflect and/or monitor their learning (Benson, 2012; Bergen, et al., 2012; Johannesen, 2013; Passey, 2010). As such, an LMS built on principles of AFL can potentially personalise learning for students.

Effective teaching and learning is one of the components that underpin personalising learning, of which communication and collaboration is one key feature. Researchers (Aslan, et al., 2011; Benson, 2012; Passey, 2010; Rourke, 2010; Snodin, 2013) agree that the LMS opens up more opportunities for communication and collaboration, leading to increased participation by students in class (Snodin, 2013) and enhancing teachers' perspectives about students (Benson, 2012; Passey, 2010).

Another key feature of effective teaching and learning is linked to the ownership of learning[8]. Research (Benson, 2012; Snodin, 2013) showed that an LMS could be used to facilitate opportunities for students to 'own' elements of their learning but this was not usually the case. Ownership of learning was seen as enabling students to control the pace of their learning (Snodin, 2013) and discuss their goals and learning (Benson, 2012; Snodin, 2013). For students to control their

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[8] Students as co-creators of the learning process and having control over their learning.

learning, behaviours needed to be learnt and, as such, require scaffolding and intervention (Snodin, 2013).

Curriculum entitlement and choice is another component of personalising learning. In opening up flexible learning environments, accessing 'anywhere, anyplace, anytime learning' (Aslan, et al., 2011; Bergen, et al., 2012; Johannesen, 2013; Snodin, 2013) and providing a range of media, students access a variety of learning opportunities and motivation is enhanced (Crook, et al., 2010).

A strong partnership around learning is a key component to personalising learning. Researchers (Benson, 2012; Bergen, et al., 2012; Johannesen, 2013; Passey, 2010) view the LMS as a way to increase parent access and involvement, a key feature of strong partnerships. The LMS can bring parents, students and teachers together in the assessment process (Johannesen, 2013), enabling parents to access their child's learning, discuss their learning with them and be more involved in the learning process (Benson, 2012). The use of video and imagery was seen by some schools to increase engagement and to increase communication with parents positively (Passey, 2010).

While it is possible to utilise aspects of the LMS to support personalising learning for students, it is equally evident that an LMS can be used to support 'traditional' modes of teaching and learning. While the depth, timing and age of participants in the research reviewed may contribute to the differing results, despite this, numerous conflicts in the findings are evident. The confusion that such contradictions elicit emphasises the need for robust research specifically focused around the use of an LMS to support the features of personalising learning in practice.

2.7. Summary

This literature review has highlighted the need for additional research on personalising learning and digital technology. Personalising learning is viewed as a potential catalyst for change in education, linked to core beliefs about education in New Zealand, yet lacks research about how it is enacted in practice. There is

also limited research about how digital technologies can be utilised to accelerate the potential of personalising learning. The limited research base illustrates how aspects of the LMS can support personalising learning for learners, yet many contradictions exist around this possibility, especially how this transfers to practice. Lastly, there is extremely limited research on personalising learning, digital technologies and/or LMSs at a primary school level. In light of this, there is an urgent need for further research into the use of an LMS to personalise learning for students, especially within primary school contexts.

The focus of this project is on exploring the use of an LMS in a primary school, describing its role in personalising learning for students. The next chapter outlines the research paradigm, methodology and approaches that guided the research.

Chapter 3 - Methodology

3.1. Introduction

This chapter outlines the research paradigm, methodology and approaches that guided the research. Firstly, the chapter begins with a statement about the purpose of the research project and the research questions being investigated. Secondly, the theory base and rationale behind adopting a descriptive multiple-case study approach, based on an interpretive paradigm, are explained. Thirdly, how the cases were selected is described. Fourthly, the data collection methods and the data analysis process deemed most appropriate to meet the purpose and needs of the project are outlined. Fifthly, the key assumptions that have influenced the research are discussed, the potential for bias is examined and key limitations are outlined. Lastly, the actions that the researcher undertook to minimise ethical issues and promote credibility are outlined.

3.2. Purpose of the research project

This research project explores the use of an LMS in a primary school, describing its role in personalising learning for students. As limited research exists around personalising learning, digital technologies and/or an LMS, within a primary school context, this project aims to enable a clearer picture of personalising learning to emerge and provide insight into the role an LMS could play in primary classrooms when personalising learning.

3.3. Research questions

The questions that guided the research are:

1. What does personalising learning look like in a primary classroom with a Learning Management System as a core component?
2. How are the teachers using a Learning Management System to personalise learning?

3.4. Theory base and rationale: Formulating an approach

A researcher has to carefully choose a style of research that reflects their purpose and the nature of the research problem (Merriam, 2009; Neuman, 2006; Yin, 2013).

3.4.1. Interpretative paradigm

This research project is situated within an interpretative paradigm as defined by Bassey (1999) and Merriam (2009) in that it is designed to explore the situation through the eyes of the participants and acknowledges there is no single, observable reality. Rather, there are several realities or interpretations of a single event (Merriam, 2009). Consequently, "researchers do not 'find' knowledge, they construct it" (Merriam, 2009, pp. 8-9). The purpose of such research is to describe, understand, interpret and to explore shared meanings with others (Bassey, 1999; Merriam, 2009).

3.4.2. Case study methodology

A case study approach has been deemed as the most appropriate methodology for this research project for a number of reasons. Qualitative case studies enable researchers to gain a deep understanding of a situation and its meaning from those involved (Merriam, 1988) especially when describing 'how' or 'why' something takes place (Berg & Lune, 2012; Merriam, 2009; Yin, 2013). They are a suitable methodology in this instance as they enable the researcher to 'see' and understand what is happening in the classroom in order to gain a deeper understanding of personalising learning and the role that the LMS plays in the classroom. As the researcher's role in this setting is that of observer, having very little control over the events as they unfold, the case study method is highly suited (Yin, 2013). Qualitative case study research involves in-depth description and analysis of a phenomenon within a clearly defined (bounded) context (Berg & Lune, 2012; Merriam, 2009; Yin, 2013) as is the case with this project, reinforcing the suitability of choosing a case study design.

Qualitative case studies link to 'real life' enabling links between theory and practice to be described. Readers are able to understand ideas more clearly than if they were presented to them as abstract theories or principles (Cohen, Manion, & Morrison, 2011; Yin, 2013). Also, results from case study research can impact teacher practice (Merriam, 1988), making it an ideal methodology for addressing problems in which understanding is sought in order to improve practice (Cohen, et al., 2011; Merriam, 1988).

Therefore, the most suitable design frame for this research project is a qualitative case study.

3.4.3. Exploratory case study

Researchers (Bassey, 1999; Merriam, 2009) have differing ways of categorising case studies' designs. Specifically, this research project comes under the umbrella of exploratory case studies, as defined by Thomas (2011) and Yin (2013). Exploratory case study designs are an ideal method for understanding and interpreting educational phenomenon and when researching innovative programmes and practice (Merriam, 1988), as is the case with this research project.

3.4.4. Multiple-case-design approach

A multiple-case-design approach (Yin, 2013) is suitable in this situation as an interpretation based on evidence from several cases can be more compelling to a reader than results based on a single instance (Merriam, 1988). They are seen to provide more understanding, insight or perceived ability to theorise about a broader context (Berg & Lune, 2012).

3.5. Research unit of analysis

The focus of study – the 'who' or the 'what' that is being analysed – is the unit of analysis and this characterises case studies (Merriam, 1988). The unit of analysis in this project is the teachers who are personalising learning for their students.

Teachers in this instance are bound together by being examples of the phenomenon.

3.6. Selecting the cases

3.6.1. Purposeful sampling

Purposive (Chein, 1981, as cited in Merriam, 2009) or purposeful sampling (Paton, 2002, as cited in Merriam, 2009) was used for selection of suitable potential schools and interested participants. This was based on the assumption that the researcher wanted to gain an insight into a specific practice and must select a sample from which the most can be learned. The researcher first established criteria which guided site selection and then selected the cases that met the criteria as outlined in Table: 3.1.

Table 3.1: Criteria for case selection

Criteria used for selection of potential school sites for research	Criteria for selections of interested participants:
• Primary School • Uses New Zealand Curriculum to inform teaching and learning • Uses an LMS to support learning • Acknowledged as an effective user of an LMS to support learning by the 'wider' education community. For example, schools visiting; presence at educational conferences • Highly regarded by the LMS provider • Accessible to the researcher in terms of location	• Classroom teacher • Uses a KnowledgeNET as part of teaching and learning programme • One participant from each year grouping • Lead teacher within the school – on the ICT/ e-learning team; facilitator of the e-learning inquiry quality learning circles. • Presentation at conferences

3.6.2. Selection of research site

The Principals or Deputy-Principals of suitable potential schools recommended by LMS providers were contacted by the researcher and invited to participate in the project. Once the ethics approval from MUHEC (Appendix A) was granted, one school was approached by the researcher as they had expressed interest in participating in the project. It met all of the case selection criteria (Table 3.1). An email (Appendix B), information sheet (Appendix C) and a consent form

(Appendix D) were sent to the school. The school consented to the researcher accessing the school for research purposes by signing and returning the consent form. The anonymity risks were explained and the school chose to be named, if needed.

3.6.3. Description of research site

The school which was used as the research site, labelled Sunshine School for anonymity purposes, is a medium sized primary school with approximately 420 students from a variety of ethnic backgrounds. The Sunshine School's Website (2013) outlines the key features of the school. The school is a decile[9] 6 school in inner city Auckland, New Zealand, which is organised into four family or school teams: Whänau One for children from New Entrants to Year 2, Whänau Two for Years 3 and Year 4, Whänau Three for children in Years 5 and Year 6 and Whänau Four, the school's Mäori Immersion Unit for Years 1 to Year 6. All classrooms have interactive whiteboards, i-pads, a range of laptops and access to digital cameras.

The Maori[10] Immersion Unit was not included in the research project as they use Te Marautanga o Aotearoa[11] for their curriculum document and this research investigation is specifically focused on the New Zealand Curriculum.

Professional development for the staff is on future-oriented learning which encompasses e-learning, thinking and AFL (School Website, 2013). Teachers from the school have presented at national conferences (such as ULearn and KnowledgeNET) and the school encourages visits from other schools (Principal's Blog, 2013).

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[9] A decile is a 10% grouping. A school's decile rating indicates the extent to which it draws its students from low socio-economic communities.
[10] Indigenous People of New Zealand
[11] Curriculum document for kura (Māori-language immersion schools) and Māori-medium schools. It is in te reo Māori (the Māori language).

3.6.4. Selection of teacher participants

The process for the selection of the teacher participants began with an invitation (Appendix E), emailed by the school's Executive Officer, to all teachers in the school. The email included the information sheet (Appendix F). Purposeful sampling was then undertaken, according to the teacher criteria (Table 3.1), to establish three potential teacher participants, from the four potential applicants who responded to the invitation. Each of the selected teachers consented to being a participant in the project, signing and returning the consent form (Appendix G).

Three teachers from the school were deemed as a suitable number of teacher participants as this enabled one teacher from each Whänau team to be selected. Thus, a variety of year group settings would be investigated. It also enabled extensive data collection and deep analysis within the timeframe that was available.

3.6.5. Description of teacher participants

Chris, Yvonne and Lucie were the teacher participants in the research project. Pseudonyms were used to help to maintain anonymity. Each of the teachers is described in detail in Chapter Four.

3.6.6. Selection of student participants

All of the students in each class of the three teacher participants were invited to participate in the research project. The teacher and the contents of the LMS, however, were the primary focus. There was no direct interaction between the researcher and the students.

Initially, the researcher met with the potential student participants to outline the project, risks and benefits and provided an opportunity for students to ask questions. Each student was given an information sheet (Appendix H) as part of this process. An invitation to parents (Appendix I), information sheet (Appendix J) and a consent form (Appendix K) were sent home with the students inviting them

to take part in the research project. A copy of the forms was also emailed to parents. Potential student participants returned consent forms which were signed by the parent/ caregiver and the student. In total, 88 students, out of a possible 128 students, chose to participate.

3.7. Methods of data collection

Case studies are eclectic in that they do not claim any particular technique for data collection (Berg & Lune, 2012; Merriam, 2009). To meet the purposes of this research project, interviews, observations and documentary information from the LMS were used. Data collection began in the middle of Term 2 (end of May 2013) and ran until the end of Term 3 (mid-September 2013). Exact dates of each data collection tool are documented in Appendix L.

3.7.1. Semi-structured interviews

Interviews are a widely used instrument for data collection (Cohen, et al., 2011). In this project, semi-structured interviews were used. Table 3.2 is an overview of the interview collection times, structure and purpose.

Table 3.2: Interview collection overview

Data Collection Method	Date Occurred	Structure	Purpose
Semi-Structured Interview – Interview One	27th May – 2nd June 2013	• Approx 30 min interview • One on one with each teacher. • Convenient to participants. • Semi-structured interview questions (Appendix M) • Audio-recorded • Interviews were transcribed (Appendix O)	• Gather rich data about teacher's perceptions, and practices around personalising learning and the LMS.
Semi-Structured Interview – Interview Two	16th – 20th September 2013	• 30 min interview with each teacher. • One on one with each teacher. • Same process observed as for Semi-Structured Interview – Initial Interview. • Semi-structured interview questions (Appendix P)	• Reflect on key features of practice • Gain clarity around data collected • Provide opportunity for final comments by participants

3.7.2. Observations

Observations are used regularly in qualitative case studies, enabling researchers to gather 'live' data from naturally occurring situations to show what is really happening in the chosen setting (Cohen, et al., 2011; Merriam, 2009). Table 3.3 is an overview of the observation collection times, structure and purpose.

Table 3.3: Observation collection overview

Data Collection Method	Date Occurred	Structure	Purpose
Semi-Structured Observation 1	1st – 14th July 2013	• Observations of a session in a 'normal' classroom programme	• Provide insight into actions that may be routine to the participants
Semi-Structured Observation 2	29th July – 11th August 2013	• Students who had chosen not to participate went into a separate space to complete work at the direction of the teacher.	• Opportunity to triangulate data retrieved from interviews or document analysis.
Semi-Structured Observation 3	26th August – 31st August 2013	• Researcher observed and took notes of the way that the teacher was working and how they had organised learning. • The researcher did not interact with students. • The groups that the teacher was working with were audio-recorded.	• Provide some knowledge of the context which can be used as a reference point in future interviews.

3.7.3. Documentary information

Documentary information[12] is likely to be relevant to every case study topic, being an unobtrusive ready-made source of data (Merriam, 2009; Yin, 2013). Table 3.4 is an overview of the LMS collection times, structure and purpose.

Table 3.4: LMS collection overview

Data Collection Method	Date Occurred	Structure	Purpose
Documentary Information – Learning Management System	1st July – 31st August (1 week blocks)	• Occurred concurrently with observations. • All data within KnowledgeNET required username and password access. • Access was to class areas and student entries in KnowledgeNET	• Provide insight into how the LMS was used. • Compare data from interviews and observations with what is evident in the

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[12] A wide range of written, visual, digital and physical material relevant to the research study being conducted (Merriam, 2009).

for the classes of the students in those classes that were participants in the project. • Class and student online work, teacher-student online conversations, student entries by student participants and lessons, resources set up by the teacher were included. • Information from non-participants was not included. • Evidence was drawn from the week of each observation.	LMS for triangulation [13] purposes. • Locate focus for future observations. • Determine possible questions to ask when interviewing in order to clarify understandings and elaborate on current findings.

3.8. Data analysis – Coding of data and description of analysis

Data analysis, according to Merriam (2009, p. 176), is the process used to "answer your research questions". Constant comparative analysis, repeatedly going over the data, comparing each element – phrase, sentence or paragraph – with all of the other elements in order to elicit themes from the data (Merriam, 2009; Thomas, 2011), was the approach used in this research project.

As this was a multiple-case study, there were two stages of analysis – the within case analysis and the cross-case analysis. Each teacher was treated as a comprehensive case in and of itself, after which cross-case analysis occurred with conclusions drawn, based on replication of findings across the cases (Berg & Lune, 2012; Merriam, 1988).

Before the data analysis phase commenced Interview One was transcribed by a transcription service, who signed a transcriber's confidentiality agreement (Appendix O) before commencing work. Audio recordings from the observations were transcribed by the researcher and combined with the researcher's observation notes from each observation.

The data analysis phase commenced with the researcher using open coding, identifying and labelling any segment of data that might be useful (Merriam,

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[13] A method used to check and establish trustworthiness, reliability and internal validity. Researchers analyse the research question by comparing and cross-checking data from multiple perspectives.

2009), within the interview and observation transcripts. Sections of the coded data from the interviews and observation transcripts were then categorised according to the Personalising Learning Framework (Appendix Q) hereafter referred to as PLF, which listed components and specific features of personalising learning synthesised by the researcher during the literature review. Interview and observational codes that did not fit into the pre-established components on the PLF were noted and classified together as new themes emerged. The PLF was used to make connections between the data, assisting with 'sense making' and helped to explain the findings (Thomas, 2011).

For each week of the observations, the data evident in KnowledgeNET was noted and categorised according to the PLF with hyperlinks to specific areas and pages included for quick reference. This information was compared with data from interviews and observations for crosschecking and triangulation purposes. Contradictory data was noted and explored further with the teachers in the second interview.

After the second interview, the interview recordings were transcribed by the transcription service, open coded by the researcher before sections of coded data were categorised according to the PLF. For each teacher, the researcher compared and crosschecked each of the PLF's, highlighting patterns and themes. As key themes emerged from the data, quotations were selected that illuminated the themes and concepts. Transcripts of interviews conducted were returned to the participant teachers for verification.

Throughout the process, memo writing was used to elaborate on personal understandings of the data and build on the information emerging as the coding was undertaken. It enabled records of developing thoughts about the data to be noted and "provide a time to reflect on issues raised in the setting and how they relate to larger theoretical, methodological and substantiative issues" (Merriam, 2009, p. 172).

Findings are presented as three individual case studies and then offered as a cross-case analysis leading to generalisations about the role of an LMS in personalising learning for students.

3.9. Methodological assumptions

Research in education cannot control all facets of the methodology, as such assumptions about the data are made which can have a bearing on the outcome of the study. The researcher has a number of personal assumptions that she brought with her to the research project. As the researcher is an experienced classroom teacher and leader in e-learning she has underlying beliefs and opinions about what effective teaching and learning look like. The research reflects the interpretation of current literature by the researcher. These understandings are evident in the development of the PLF. When using the PLF to categorise data, the researcher used her own interpretations of what codes fitted within which categories.

In clearly stating the assumptions on which the research was based, the audience can take these into consideration when reading and interpreting the findings and discussion sections of the thesis.

3.10.   Potential for bias

Issues of bias can slip into the process due to the subjectivity of the researcher and those involved in the case (A. P. Johnson, 2008; Merriam, 2009) which may affect how the data is interpreted (Lincoln & Guba, 1985). Furthermore, once the bias is known, it may be accounted for in the interpretations and strategies can be undertaken to minimise the effects (A. P. Johnson, 2008; Merriam, 2009). The potential for bias was evident in that the researcher is 'known' as a leader in the area of e-learning and employed at the research school and the potential for

teachers to be effected by the Hawthorne effect[14] modifying 'normal' classroom practice to reflect what they felt the researcher was seeking.

These potential conflicts of role have been addressed by triangulating data from interviews, observations, and the evidence in the LMS, checking interpretations with individuals and staying on-site over a period of time. The researcher sought advice from her supervisors who guided her through the process. The researcher separated her professional and researcher roles by ensuring that teachers knew when the researcher was onsite in her role as researcher and when the researcher was onsite in her role of teacher.

3.11. Methodological limitations

All research methods have limitations and it is the responsibility of the researcher to describe the limitations of the chosen methodology, thereby acknowledging the potential weaknesses of the study.   This section outlines the limitations of choosing a case study research design and the actions that the researcher undertook to minimise these limitations.

3.11.1. Role of researcher – Distancing oneself from the situation

As a passionate, dedicated teacher, it may be difficult for the researcher to be a 'good listener' at all times and not be trapped by her own ideologies or preconceptions (Yin, 2013) resulting in leading questions and statement of opinions which may be different to the participants' views. It would also make it challenging to remain in the 'researcher' role as opposed to slipping into the familiar 'teacher' role. Ongoing consultation with the university supervisors and increased researcher consciousness, resulted in the researcher conducting herself

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[14] A term referring to the inclination of some people to work harder and perform better when they are participants in a research project.

in an ethically aware manner, attempting to ensure that 'researcher' role guided all actions.

3.11.2. <u>Presence of the researcher in the setting</u>

Merriam (2009) notes that the presence of a researcher in the classroom can itself change the setting from what is 'normal' practice, thus not giving an accurate picture. The researcher attempted to 'blend' in with the surrounding as much as possible and to be unobtrusive in movements when undertaking class observations.

3.11.3. <u>KnowledgeNET accessibility</u>

The researcher in her current role at the school has administrative access to all areas and all information in KnowledgeNET. Within the configuration of KnowledgeNET, it was not possible to restrict access to certain users, in this case non-participants. The researcher acknowledged that this posed an ethical dilemma and ensured that she only accessed data of participants who agreed to take part in the project. In addition, the researcher made this limitation clear on all information sheets.

3.12.   Credibility or trustworthiness

The concept of trustworthiness is important for any qualitative study as many researchers fail to recognise that different research methods impose certain perspectives on reality (Berg & Lune, 2012) and as such, can influence the findings. Lincoln and Guba (1985, p. 260) note that the concept for quantitative researchers "is simple. How can the inquirer persuade his or her audience that the findings of an inquiry are worth paying attention to, worth taking account of?" Addressing reliability (extent to which there is consistency in the findings), internal validity (extent to which research findings are credible) and external validity (extent to which the findings can be generalised or transferred to other situations) increases the credibility or trustworthiness of a research project. The researcher implemented a number of strategies to address these: triangulation,

using a variety of data collection techniques, articulating the research process, checking interpretations with the teacher participants, spending time on site and conducting oneself in an ethical manner.

Firstly, triangulation was utilised to enhance the trustworthiness, reliability and internal validity of this project. It enables the researcher to detect bias, verify the repeatability of the observations, and validate the quality of research findings (Merriam, 2009; Yin, 2013). In this research project, triangulation involved using three different data collection methods – interviews, observations and documentary information in the LMS – for three different teachers, enabling the researcher to compare, cross check data and look for patterns to provide greater depth and accuracy.

Secondly, three data collection techniques were used to enable in-depth rich analysis and justifiable conclusions to be drawn: interviews, observations and documentary information from the LMS. Collecting data in three ways enables a 'chain of evidence' to be documented which gives reliability, credibility and validity to the case study (Bassey, 1999; Yin, 2013).

Thirdly, clear, in-depth articulation of the research process means that others could repeat the research if they so wished (Bassey, 1999; Berg & Lune, 2012), enabling the audience to decide the degree that findings are transferrable to another context (Basit, 2010). A detailed description of the way the study was conducted was outlined earlier in this chapter.

Fourthly, the researcher checked interpretations with the teacher participants, reviewing the transcripts to ensure an accurate account of the interviews had been documented (Appendix N). Each participant was also offered the opportunity to review the final summary with the researcher. The researcher clarified research bias and assumptions and checked emerging findings with her supervisors as she moved through the research process to enhance credibility (Merriam, 2009).

Fifthly, the research was conducted over a 15-week period (mid Term 2 to end Term 3) enabling the researcher to observe and record at different times in a school term. This enabled perspectives at the different times to be recorded, adding to the in-depth picture of what was occurring.

Lastly, the validity and reliability of a qualitative case study depends on the ethics of the researcher as they are the main instrument for obtaining knowledge (Cohen, et al., 2011; Merriam, 2009; Neuman, 2006; Yin, 2013). The researcher is solely responsible for conducting themselves in an ethical and credible manner.

3.13.   Ethical considerations

Case study research has a number of moral and ethical dilemmas which arise particularly because of the complexities associated with researching the lives of people and presenting these accounts to the world (Kvale & Brinkmann, 2009; Neuman, 2006) . These ethical issues are evident throughout the entire research process and need to be at the forefront of the researchers mind (Berg & Lune, 2012; Cohen, et al., 2011; Yin, 2013).

Ethical principles of human participant research were carefully examined by the researcher, in consultation with university supervisors, as evidenced by granting of full ethics approval by the Massey University Human Ethics Committee (Appendix A) and actions were implemented to minimise possible harm. In addition to the researcher conducting herself in an ethical and credible manner, the researcher ensured: participants gave informed consent, privacy of the participants was protected and strategies were taken to minimise possible harm to participants.

Researchers ensure the rights, privacy, and welfare of the people and communities that are the focus of their studies (Berg & Lune, 2012) by ensuring that the potential participants that agreed to take part in the study understand what they are agreeing to (Thomas, 2011). The consent and co-operation of the potential participants in this case study were obtained before research commenced. School and individual participation was voluntary and their right to

withdraw from the research project at any time was made clear. The possible school, potential participants and their parents/caregivers were provided with the relevant information sheet.

Researchers protect privacy of participants by ensuring anonymity and confidentiality of the participants. Confidentiality in this research project was upheld by the use of aliases for people, places and other personal means of identification (Cohen, et al., 2011; Neuman, 2006). However, as the school uses KnowledgeNET in some unique ways it may be possible to identify the school and, to a lesser degree, the teachers involved. The information sheets clearly stated that although every effort would be made to support confidentiality this may not be possible. The school chose to be named and signed the consent form to indicate this. The teachers and students chose to be participants under these conditions. Data and other materials were stored securely (Cohen, et al., 2011; Merriam, 2009).

3.14.   Summary

This chapter has described the foundation on which this case study research project was built, offering a detailed description of the actions the researcher undertook at each step of the project. Providing a clear, in-depth articulation of research process ensures a transparent process and demonstrates the researcher's commitment to ensuring that the research was conducted in an ethical and credible manner. The next chapter presents the findings that emerged from this research process.

Chapter 4 - Findings

4.1. Introduction

The findings reported in this chapter reveal the way that KnowledgeNET (the LMS) is used by three teachers to personalise learning. As each teacher was a case in itself, the findings related to each teacher are presented separately.

The section for each teacher highlights the specific components around which personalising learning was built and how this was evident in the classroom (research question one) and on their LMS, KnowledgeNET (research question two). The findings are presented as they relate to the specific features of personalising learning, and are backwards-mapped to the core components of personalising learning, outlined in Figure 2.1. The findings are not presented in any particular order. They reflect the core components of personalising learning which emerged during the data analysis of the information participant teachers provided during their interviews and which were replicated in classroom observations and/or evident in the documentary analysis of KnowledgeNET.

Each teacher's section also outlines the challenges that they faced when personalising learning, a significant finding which emerged during data analysis. Although KnowledgeNET is used within the classroom, the use of KnowledgeNET is specifically addressed in more detail in research question two.

4.2. Teacher One – Chris

Chris is a Year 5 and 6 teacher who has been teaching for three years, all of which have been in the current school. She has a Bachelor degree in Science with a Graduate Teaching Diploma. Chris is a co-leader in e-learning at the school in the year the research took place. She teaches in a single cell classroom[15] on the 2nd level of a newly built area of the school. Desks within the classroom were arranged in small groups with some individual desks lined up against the far wall. A reading corner includes a bookshelf and a couch. At the front of the classroom is an Interactive Whiteboard (IWB) with a large clear carpet space in front of it. To the left of the IWB is a cupboard where the ICT equipment is housed. At the time of the observations, this cupboard housed 15 mini-laptops and two ipads which the students were able to access at any time. Eighteen students, out of a possible 25 students, chose to be participants in the project.

4.3. Question One - What does personalising learning look like in Chris's classroom with an LMS as a core component?

Three key components of personalising learning were evident in Chris's classroom: (a) using assessment for learning as a scaffold around which personalising learning was constructed, (b) utilising teaching and learning strategies, and (c) valuing curriculum entitlement and choice.

4.3.1.   Assessment for learning

Chris saw AFL pedagogy as an essential enabler to personalising learning in the classroom, emphasising that in "*personalised learning it is important to see strengths of students and weaknesses. It* [AFL] k*ind of allows you to see the pathways, everything about that student*" (CSepInt2). When utilising AFL as a scaffold for personalising learning, the following AFL principles were evident in the classroom observations: using evidence to identify needs, communicating

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[15] Single enclosed classroom with one teacher and one class.

student needs, differentiating instruction to meet student needs, ongoing monitoring to inform planning, providing feedback and feed-forward and reflecting on learning.

4.3.1.1. *Using evidence to identify needs*

Identifying student needs was the first step for Chris in personalising learning for students so she could plan to address these needs (CMayInt1). She used assessment and various forms of evidence to identify students' strengths and weaknesses. Student needs were turned into student goals. Chris explained how this worked in maths:

> *The goals for maths came from the GLOSS test [16] this term … Also through formative assessment[17] in my class from what I have seen. And also from asking them … And in my first week I actually gave them hard activities to see their level … I did create their goal for them. I will say that.* (CMayInt1)

Chris was taking steps to involve students more in the process (CMayInt1). This was evident during writing, when students were assessing samples of their instructional writing against their writing goals, reflecting on progress and identifying their next steps for learning[18]. Chris worked with the students as they assessed their work (CJulyOb1):

> Brittany – *I haven't used those.*
> She points to cause words.
> Chris– *So you still haven't used those?*
> Brittany – *Nope.*
> Chris – *Ok. So what is going to be your big thing in your reflection then?*
> Brittany – *Umm. I still have to use cause words.*
> Chris – *So will you still be working on it?*
> Brittany – *Yep*.

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[16] GLOSS - Global Strategy Stage Assessment – An individual test which enables a identification of the global stage students have reached in number strategies. http://www.nzmaths.co.nz/gloss-forms?parent_nod

[17] Use of non-standardised assessments which occur throughout the learning process.

[18] Communicating to students where they need to go next with their learning using defined benchmarks or progressions.

4.3.1.2. Communicating student needs

Student needs were communicated as learning goals which were set at the beginning of each term in reading, writing, and maths (CMayInt1) and placed on KnowledgeNET as detailed in Section 4.4.3.1. Chris explained, "*The goals would be something like, 'we are learning how to solve percentage problems' … and then there would be seven steps, like 'I cans'*[19] *under that. Like there is a WALT*[20] *and there is obviously the success criteria which are 'I cans' *" (CMayInt1).

Chris set the goals for students in reading and maths and co-constructed the success criteria with them in writing (CMayInt1). In Observation 2 (CAugOb2), while Chris had established the learning goal for the group of students, she asked them to develop the related success criteria. Chris said, *"We are learning how to use our prior knowledge and what we read … to make predictions about a text. So, who thinks they can help me with some success criteria?"* At the end of the session, students chose the success criteria which they thought was most relevant for them to use as their 'I cans' for their goal.

4.3.1.3. Differentiated instruction

The learning goals informed most of the learning that happened in class, as "*typically we will learn the stuff in our goal*" (CMayInt1). Chris grouped the students according to these common needs. Each of the in-class observations showed that Chris worked with small groups on "*activities … based on student needs*" (CSepInt2), clearly communicating what she wanted students to learn (CJulyOb1, CAugOb2, CAugOb3). In Observation 2 (CAugOb2), Chris started the lesson by saying:

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[19] Success criteria - These describe how students will go about achieving a learning intention or how they will know when they have learnt.

[20] We Are Learning To - This is the learning intention for a lesson or series of lessons. It is a statement which describes clearly what the teacher wants the students to know, understand and be able to do as a result of learning and teaching.

I wanted to focus on using our prior knowledge. So I have made our learning intention ... 'We are learning how to use our prior knowledge and what we read', because we are going to do a bit of reading today, to make predictions about a text. So, who thinks they can help me with some success criteria. So what do we need to do?

During each observation (CJulyOb1, CAugOb2, CAugOb3), Chris moved between individual students as they worked, asking questions of their progress and working one-to-one with them. This was evident in Observation 3 (CAugOb3), when one student was working on the maths activity on KnowledgeNET and talking to himself:

Fred – *These are hard. I don't get this. It makes a huge difference the question!*
Chris walked past.
Chris – *What are you up to Fred? Did you try that thing?*
Chris points to a video on the KnowledgeNET page.
Fred – *Yeah. But it wasn't like as hard as that.*
Chris – *Are they too hard? Are they all too hard or is it just the last one?*
Fred – *Just the last one.*
Chris – *That is the point. The last one is meant to be a challenge.*
Fred – *I did all 3 with multiplication*
Chris – *Didn't you try that method?*
Fred – *No.*
Chris – *Well, maybe you should try.*

4.3.1.4.   Students reflecting on learning

Chris encouraged students to reflect on their learning. This provided her with insight into each student's learning in order to structure their next learning steps (CMayInt1, CSepInt2). The group workshops ended with the students reflecting on their learning and whether they had met the success criteria (CJulyOb1, CAugOb2). At the end of Observation 1 (CJulyOb1), Chris asked the students, "*If you are finished, thumbs up; not finished, getting it done, thumbs to the side. If you did really badly and you didn't do any of these, thumbs down*".

In Observation 1 (CJulyOb1), Chris worked through the process of reflection on goals using evidence of learning from workbooks and work in KnowledgeNET

with a group of students. Chris's role in prompting students to access work and reflect on their goals was indicated in the extract shown in Section 4.3.1.1.

4.3.2.   Effective teaching and learning

Chris used some specific teaching and learning strategies to personalise learning in her classroom. She saw her role as a facilitator of learning, supporting students as active participants.

4.3.2.1.   Teacher as facilitator of learning

Learning workshops, when Chris was working with a small group, were focused on students being actively involved in learning rather than completing a task or an activity. Chris's role when working with a small group was that of facilitator of learning, co-constructing learning with students, as evidenced by the way she worked with the groups. The observations (CJulyOb1, CAugOb2, CAugOb3) demonstrated how she led discussions, asked open-ended questions, linked new learning with prior learning and guided students through the learning process and task. For instance in Observation 2 (CAugOb2), Chris was working with a group of students who would be reading Anne Frank's Diary during the term. She asked them, "*So, what do you know about World War 2?*" The students shared their ideas with a peer before contributing to the group brainstorm. As the students contributed Chris prompted them for more information and an involved discussion ensued between all group members. When they had exhausted their ideas, they moved onto making predictions, "*What kind of things do you think we are going to see in her diary*?"

4.3.3.   Curriculum entitlement and choice

Chris provided the students with curriculum entitlement and choice. She enabled students some choice in their learning, considered student interests and valued a varied curriculum.

4.3.3.1.   Student choice

Chris sometimes encouraged students to make choices with their learning during the observations, seeing this as an essential component of personalising learning. This was evident in the way that KnowledgeNET was used, outlined in the findings for research question 2. It was also evident to some degree within the small group workshops. In Observation 2 (CAugOb2), Chris gave two boys the choice of reading the book *Anne Frank's Diary* as they were concerned that it was too girly for them:

> Chris turned to Randal and Timothy.
> Chris - *Would you like not to be here? It is up to you to make a decision now.*
> *Both students shook their heads.*

4.3.3.2.   Student interests

When personalising learning Chris considered the students' interests when engaging them in the learning process. This was evident in Observation 2 (CAugOb2), by the choice of *Anne Frank's Diary* as the reading book for the term from a group of students:

> Randal – *You didn't think about me and Timothy if it is about a girl*
> Chris – *Well, actually. You are going to find out that it is not just to do with a young girl …*
> Bethany – *It is about a war.*
> Chris - *It is not to do with a young girl who has a daily life like you or me.*
> Students read blurb on back of the book.
> Randal - *We are at an age where we read those kinds of books anyway*!

4.3.3.3.   Varied curriculum

Chris believed that providing greater breadth in curriculum would enable learning to be further personalised for her students. In Interview 2 (CSepInt2), Chris felt that "*a lot of our curriculum at our school is reading, writing and maths. We don't focus enough on other curriculum areas*". This is evident by the focus on reading, writing and maths goals each term and the associated focused learning.

The evidence in the section has shown that Chris is personalising learning in her classroom through the use of AFL principles to scaffold learning around student needs in reading, writing and maths. The development of learning goals at the

beginning of each term determines the way that the students are grouped and the teaching and learning which occur throughout the term. Her role is a facilitator of learning. Personalising learning appears to be about enabling students to choose from teacher designed activities and, where possible, take into consideration their interests.

4.4. Question Two - How is Chris using an LMS to personalise learning?

Four key components of personalising learning were evident in the way that Chris used KnowledgeNET: (a) teaching and learning strategies, (b) curriculum entitlement and choice, (c) assessment for learning and (d) strong relationships.

4.4.1. Utilising teaching and learning strategies

Chris used KnowledgeNET as a tool to personalise learning.

4.4.1.1. KnowledgeNET as a tool

Chris viewed KnowledgeNET as, "A *tool to actually enhance learning, to show learning, to reflect on learning, so it's a tool, it's a place for evidence, it's a place for goal setting, it's a place for communication … it's a place where a lot of our everyday learning is done*" (CSepInt2). She saw KnowledgeNET as a tool to make "*learning visible* … [it] *really helps students to see where they are and where to next, and what they need to do* … [it] *helps with learning conversations[21] about assessment*" (CSepInt2).

As shown throughout this section, the evidence in the LMS observations (CJulyLMS1, CAugLMS2, CAugLMS3) and classroom observations (CJulyOb1, CAugOb2, CAugOb3) suggest that the way that KnowledgeNET was used was built around the needs of the students (i.e. their next steps).

[21] Formal, one to one conversations where students and teachers discuss student progress and jointly decide what to do next, or informal constructive feedback which takes place during learning.

4.4.1.2. A variety of pathways to access learning

Chris used websites, videos, games, and pictures to provide alternative pathways to access learning, as a way of personalising learning for students.   When designing the learning links pages (CJulyLMS1, CAugLMS2, CAugLMS3), she designed them "*to go between different pathways, so it's videos, games, pictures, different sorts of things, so students have access to different ways of learning, different ways of sharing their knowledge*" (CSepInt2). Figure 4.1 is an example of a learning links activity for a maths group in Week 2, Term 3 (CAugLMS2) which shows the use of an online video to support learning.
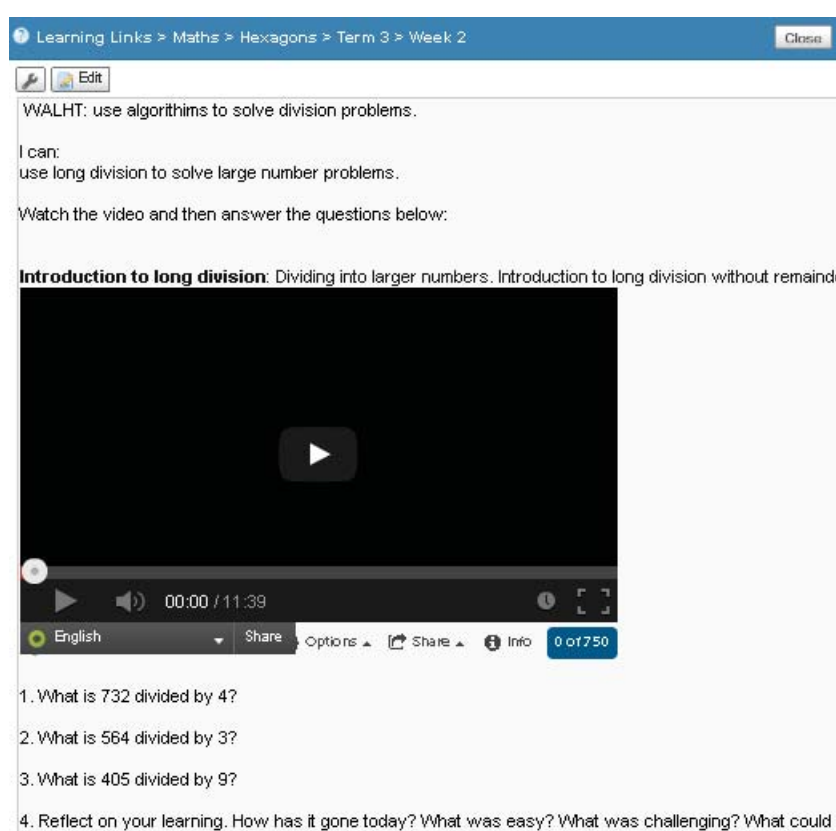
Figure 4.1 Learning links activity for a Hexagons maths group

KnowledgeNET (CJulyLMS1, CAugLMS2, CAugLMS3) also provided the students with a variety of ways to communicate their learning. They were able to use audio, video or typing functions to respond to questions, post reflections and upload evidence. Figure 4.2 is an example of a student response to a learning

links activity for a writing group in Week 10, Term 2, (CJulyLMS1). It shows a typed response.
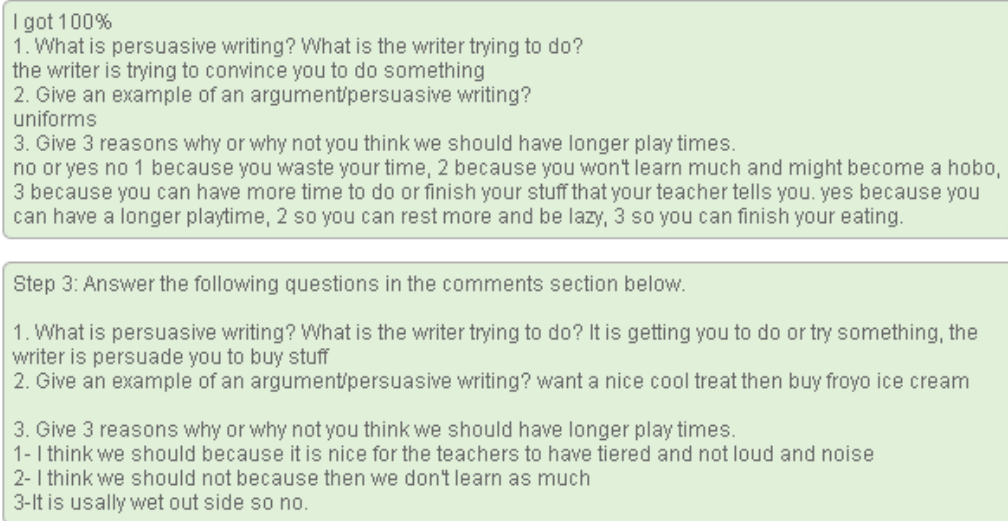
Figure 4.2 Learning links activity response from students to a group writing activity

4.4.2. Curriculum entitlement and choice

Chris provided students with curriculum entitlement and choice. She allowed students some choice in their learning and considered their interests.

4.4.2.1. Student choice and independence

Chris used KnowledgeNET as part of a contract-based[22] system, aimed at providing content choice for students. This was "a *big thing in their classroom*" (CSepInt2). "*Students choose when they do it. They choose how to time themselves. They choose if they don't feel like doing one of those activities*" (CMayInt1). Chris felt that, "*Independence will lead to personalisation because they will start thinking about their learning ... to make decisions, to reflect on their work, to think about what they need to work on*" (CMayInt1).

Each week when students were not working with the teacher, they were able to choose from a list of teacher-designed activities listed as the 'Learning of the

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[22] A list of learning activities a student is expected to complete within a set timeframe.

Week'. This was posted on KnowledgeNET (CJulyLMS1, CAugLMS2, CAugLMS3) as shown in Figure 4.3. Different activities on the list for 'Learning of the Week' were evident each week.
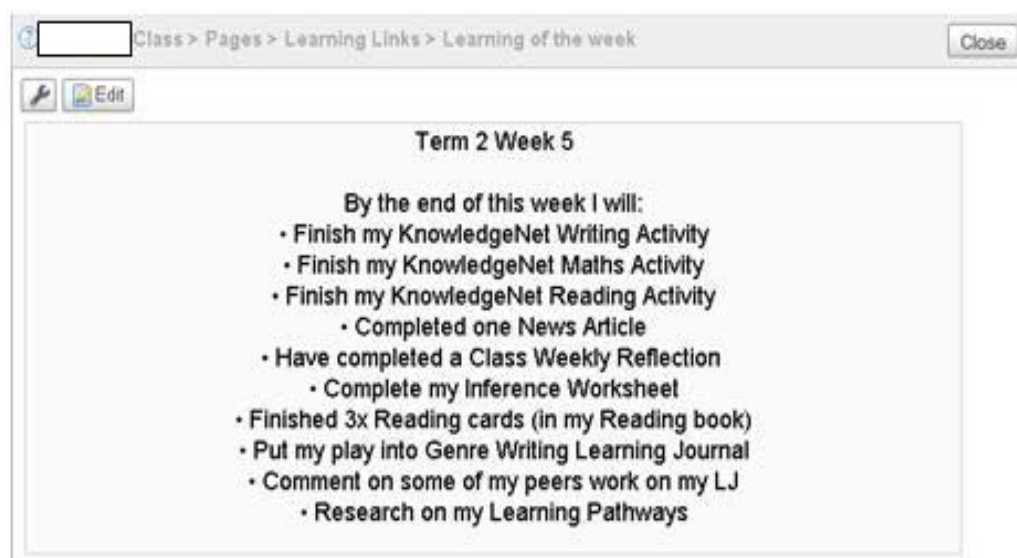
Figure 4.3: Learning of the Week

This was noticeable in Observation 3 (CAugOb3), when the researcher observed two girls sitting together on a couch working on their contract:

> Mary - *What are you going to do next?*
> Martha- *Are you finished?*
> Mary - *No.*
> Martha - *I have done all my activities. I am finished.*
> Mary goes onto a new activity. She browses to the 'Welcome to our News Article Page'.
> Martha – *Yeah! That is a really interesting article. Do you have a highlighter?*
> Mary – *Nope.*
> Mary puts her headphones back on and then she starts reading the article. Martha gets up and goes looking for a highlighter. She finds one and then goes over to the whiteboard and highlights a completed activity on the tracking sheet.

Chris indicated, in Interview 2 (CSepInt2), that she was aware that rather than content choice, "*ownership of learning … where they start to go and make better decisions about what they're going to do with their learning time themselves*", was where "*I would love to move to*". She felt that this move "*fully depends on the class, the students and, and the teacher and how it's run*" (CSepInt2).

4.4.2.2.   Student interests

Chris used learning reflections and polls in KnowledgeNET to gauge what students were interested in as "*it lets me understand what they are actually enjoying in class and what they are liking in class*" (CMayInt1) and to "*help me from there to see what they needed help in*" (CMayInt1).   Chris tried to find online activities "*from what I know of my kids*" as this would engage them in learning (CSepInt2).   This was apparent when she described the effect of a news article she posted around the online game, Minecraft, for a reading and writing activity, "*I'll tell you when it's Minecraft. It does get them interested*" (CSepInt2).

There were no polls evident during the KnowledgeNET observation periods (CJulyLMS1, CAugLMS2, CAugLMS3).   Chris posted a question in the learning reflection area of KnowledgeNET in Week 10, Term 2 (CJulyLMS1) and in Week 5, Term 3 (CAugLMS3).   Learning reflections included a series of questions which students responded to and were designed to "*get them thinking about what they are actually doing*" (CSepInt2).   Figure 4.4 shows the question posed in Week 10, Term 2 (CJulyLMS1) and Figure 4.5 shows a student response.

Topic: Term 2

We have finally made it through Term 2,

1. What has been your favourite part about Term 2? Why?

2. Have you liked our independent learning this term? Would you like to continue it next term? Why or why not?

3. We have talked a lot about making good decisions. Do you think you are a good decision maker? Why or why not?

4. In Term 3 we have our school jubilee. What history would you like to learn about?

Figure 4.4: Questions in the learning reflections area

We have finally made it through Term 2

1. What has been your favourite part about Term 2? Why?
Camp becuse it was a time when we got to try heaps of things.

2. Have you liked our independent learning this term? Would you like to continue it next term? Why or why not?
Yes i have yes i would like to because it has made us focus on time managemint and being resonerble.

3. We have talked a lot about making good decisions. Do you think you are a good decision maker? Why or why not?
yes because i,ve being making good chousie and i've been getting my work done.

4. In Term 3 we have our school jubilee. What history would you like to learn about?
how they came up with art week.

Figure 4.5: Learning reflection post by student

4.4.3. Assessment for learning

Chris is personalising learning in KnowledgeNET by using AFL principles to scaffold learning. Specifically, she used KnowledgeNET to communicate student needs, differentiate instruction, inform future planning and provide an avenue for feedback, feed-forward and reflection.

4.4.3.1. Communicating student needs

Student needs were communicated to students and parents as learning goals in KnowledgeNET as shown in Figure 4.6 (CJulyLMS1, CAugLMS2).

Selected Topic: Personal - 2013 reading-understand what i have read

Description
WALHT: understand and make inferences about a story.

Reflection/Goals
I can:
• Think about the story.
• Read between the lines.
• Use clues from the story.
• Think of what the author doesn't say.
• Make predictions about what the author is trying to say based on my experiences using the clues that the author provides.

Figure 4.6: Student learning goal and success criteria

4.4.3.2.   Differentiated instruction

The learning goals informed most of the learning that happened in KnowledgeNET. Chris designed KnowledgeNET so "*the learning journey is linked to the learning journal which is linked to the learning links*" (CMayInt1), with these "*based on our goal and based on our learning*" (CSepInt2).

Chris had a number of learning links pages set up in her class area of KnowledgeNET for reading, writing and maths (CJulyLMS1, CAugLMS2, CAugLMS3). She set these up "*based on groups, for now. And I try to look at what our learning intention for the week is or what we are learning in class and I try to see if I can find an activity based on that*" (CMayInt1). Most of these pages had a learning intention and success criteria at the top of the page, followed by an activity and some questions for students to respond to using the comment feature. These pages changed each week of the observations and were different (CJulyLMS1, CAugLMS2, CAugLMS3). Figure 4.1 is an example of a learning links activity.

4.4.3.3.   Ongoing monitoring to inform planning

Chris described how she used KnowledgeNET in a number of ways as a tool to inform planning:

> *And so it really does give me a view and I like to see the reflections about how they feel about their learning too because it gives me an idea of, do I really, is that something I need to backtrack on and focus on in class with a group, or do we need to just, are we done with that, or is this something we really need to bring to practice.* (CSepInt2)

She spoke about how she was now making reflections more focused, especially in KnowledgeNET, in order to base the workshops "*on what we can see as weaknesses or what they've* [students] *identified as weaknesses*" (CSepInt2). In Week 10, Term 2, (CJulyLMS1) Chris asked a series of questions based around persuasive writing which gave her insight into how the students had understood these concepts as shown in Figure 4.2.

Chris explained in Interview 1 (CMayInt1), that learning journals were, "*Basically a place where students can post evidence, like pieces of work, or videos of themselves, reflections, different things … in reading, writing and maths*". They are linked to "*their learning intention for the week. And basically, that's typically linked to the goal*". During the three observation periods (CJulyOb1, CAugOb2, CAugOb3) six students uploaded video evidence to this area.

4.4.3.4. Feedback and feed-forward

KnowledgeNET provided an opportunity for students and Chris to comment on learning that was posted. In Interview 2 (CSepInt2), Chris told how "*commenting on peers' work*" was often an activity on the class contract and that she "*tend*[ed] *to do it throughout the week and then go in little snippets*". All of the comments related to learning. Chris had responded to two of the students during the observations. Figure 4.7 is an example of a comment to a student's play by Chris and another student (CAugLMS3).
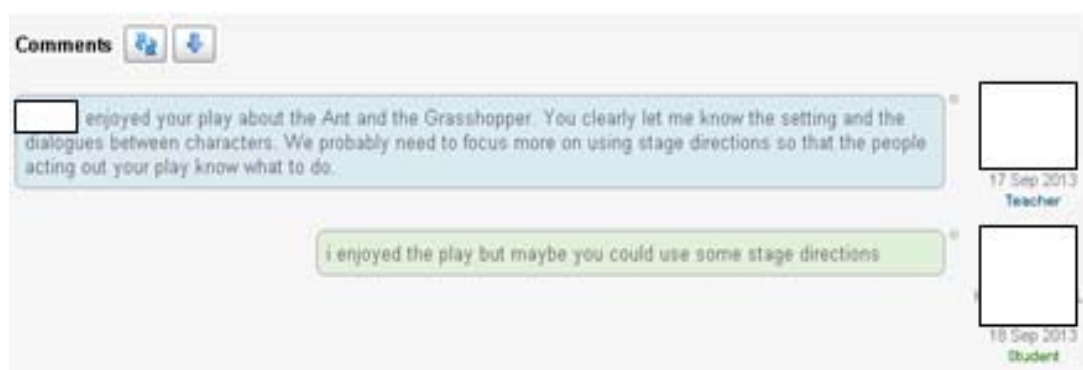
Figure 4.7: Teacher and student feedback comment

4.4.3.5. Students reflecting on learning

In addition to learning reflections (shown in Section 4.4.2.2) and learning links responses (shown in Section 4.4.1.2), Chris encouraged students to reflect on their goals in KnowledgeNET at the end of the term. 43 comments against student goals were evident in KnowledgeNET and one is shown in Figure 4.8

(CJulyLMS1). Observation 1 (CJulyOb1) showed how Chris modelled [23] goal reflections, detailed in Section 4.3.1.1.

> I have achieve using simple adjectives to describe the materials and equipment ed. E.g. big spoon, white bread and using adverbs of manner to add meaning to verbs. E.g. Fold gently, Lightly spread and using using action verbs I can do these things because I can use these things in a instruction.
> I need to work on using prepositions to add detail. E.g. on, under, in above and using cause words (because, due to, as) and effect words (since, as a result) to show how parts of the topic relate to each other. I need to work on these things because we have not done i t much in class.
> You can see evidence of my learning on my learning links page and on my learning journals page.
> I think instructions are important because other wise you not know exactly where to go or how much to add of something to add a mixture.

Figure 4.8: Student response to Term 2 writing goal

Chris also responded to student learning goals in KnowledgeNET (CJulyLMS1), commenting on 30 of the 43 learning goals posts, outlining strengths and weaknesses each time. An example is shown in Figure 4.9.

> I know that we haven't used many adjectives in our classroom because of the type of instructional writing we have been doing. It is difficult to actually add in adjectives when you are writing about how things work in the classroom. I enjoyed looking at the usage of adverbs in one of your KnowledgeNet activities as well. We can continue to look at using prepositions to help improve our writing. We will also continue to look at other language features and how they improve our writing.

Figure 4.9: Teacher response to Term 2 writing goal

4.4.4. Valuing strong relationships

Chris highlighted the potential of KnowledgeNET to increase parental involvement in learning.

4.4.4.1. Parental involvement and open communication around learning

In Interview 2 (CSepInt2), Chris highlighted the potential of KnowledgeNET to enable parents to become "*part of the classroom, even by not being in the classroom*" and get "*insight into what is happening*" for their child. During the time that each of the observations took place, there was no evidence of parental

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[23] The teacher "showing how" and thinking aloud to make learning visible.

involvement in KnowledgeNET (CJulyLMS1, CAugLMS2, CAugLMS3). Chris acknowledged, in Interview 2 (CSepInt2), that parental involvement was hard to monitor as "*a lot of parents won't comment, students come right back and tell me that their parents have seen this or that*". Chris believed, "*That's a nice thing. At least that feels like a better partnership as of now*".

The data in this section has shown that Chris is personalising learning with KnowledgeNET through the use of AFL principles to scaffold learning around student needs in reading, writing and maths. KnowledgeNET informs the teaching in the classroom; teaching in the classroom informs the way that KnowledgeNET is used. KnowledgeNET is seen as a tool for learning which assists Chris in gaining greater insight into how the learning is happening for the students and provides them with a variety of ways to access their learning. There are many similarities between the way that Chris teaches in her classroom and the way that she sets up KnowledgeNET.

As part of exploring the research questions, analysis of the data highlighted some challenges that Chris faced when personalising learning. These are discussed in the next section.

4.5. Challenges to Personalising Learning in Chris's classroom

Chris mentioned a number of challenges that she experienced when personalising learning for her students – time, student maturity and independence skills, teacher knowledge and understanding, strong teacher role and limitations within KnowledgeNET.

4.5.1. Time

Time was a barrier for Chris when trying to personalise learning. Chris found, "*It's been very hard to actually comment on that learning straight away in KnowledgeNET, so a lot of the time it's verbal, unfortunately, this term's been a bit busy*" (CSepInt2). She acknowledged that when looking for appropriate resources and activities, "*finding things and finding the right things that could actually help is difficult sometimes*" (CMayInt1)*.* She also disclosed she does not have "*enough time to do that* [curriculum variety] *... and I think that's really hard for my students. But I believe, if I further personalise learning that can be rectified*" (CSepInt2).

4.5.2. Student maturity

Chris was concerned that primary students did not have the skill-set required to have a greater voice in their learning. Chris mentioned that getting students to set their goals was hard (CMayInt1):

> *Even at this age, a ten year old age, for some of them to actually tell you ... But you know a child doesn't know that they need to learn part-whole strategies, or that they need to learn decimals. They don't actually know that.*

Chris noted in Interview 2 (CSepInt2), "*A big step for next term, is trying to really push them to make their own goals rather than me*".

4.5.3. Student skills

Chris felt that some primary school students did not have the skills needed to manage their learning and be independent. In Interview 2 (CSepInt2) noted:

The kids who aren't yet ready to be independent, how do you get them motivated, how do you get them involved? If they're still not at the point where they can say, I need to work on this, or I need to do this, because when you give them that choice, how does that work?

4.5.4. Teacher knowledge and understanding

Chris acknowledged that when it came to personalising learning she was, *"Just on that journey myself. I haven't fully gotten there, but I feel like I am starting to get there"* (CMayInt1). In Interview 2 (CSepInt2), Chris spoke about the professional reading she was doing and how she was always looking at different possibilities. Chris described how her perception about personalising learning had changed over the duration of the project which in turn influenced the way that she structured her classroom: "*I'm finding better ways to run how my classroom works*" (CSepInt2).

4.5.5. Heavy teacher role in KnowledgeNET

The way KnowledgeNET is used in a classroom "*depends on how it's* [KnowledgeNET] *used by the teacher. Depends on how it's used as a tool*" (CSepInt2). In Interview 2 (CSepInt2), Chris discussed how "*as of now, it's … [me] putting in activities and me putting in different things*" (CSepInt2).

4.5.6. Limitations within KnowledgeNET program

Chris noted that there were limitations with KnowledgeNET that made it difficult to use at times. She spoke about how "*ipads don't work well with KnowledgeNET and often enough KnowledgeNET is slow*" (CMayInt1) and that "*kids have issues with something, or something is not uploading*" (CMayInt1). Chris suggested, "*If we had a system where learning journals and learning journey were linked together, that'd be even better. I think that would be easier to do as well*" (CSepInt2).

The comments in this section show that Chris faces a number of challenges when personalising learning.

4.6. Teacher Two – Lucie

Lucie is a Year 3 and 4 teacher who has been teaching for 10 years. This is Lucie's fifth year at the research school. She has a Bachelor degree in Education with a teaching diploma and is currently undertaking further post-graduate study. She is the leader of Literacy and the Year 3 and 4 Whānau team. Lucie teaches in a collaborative environment with another teacher, with both teachers responsible for the teaching and learning of the two classes. 36 students out of a possible 52 students chose to participant in the project.

The classroom is a double classroom with a sliding door between them that was open during the classroom observations. The classroom has a range of 'non-traditional' furniture with the inclusion of tables, low kneelers, beanbags, stools and benches which are arranged haphazardly around the room. The positioning of the furniture appeared to change with each observation. At the front of the classroom was an IWB and a large whiteboard. There was a clear carpeted area in front of the IWB. At the time of the observations, there was a cupboard in the back of the classroom which housed 10 mini-laptops and two ipads which the students could access at any time. There was an additional room accessible from the classroom which contained long benches and chairs.

4.7. Question One - What does personalising learning look like in Lucie's classroom with an LMS as a core component?

Three key components of personalising learning were evident in Lucie's classroom: (a) using assessment for learning as a scaffold around which personalising learning was constructed, (b) utilising teaching and learning strategies and (c) supporting curriculum entitlement and choice.

4.7.1. Assessment for learning

Lucie saw AFL pedagogy as an important part of personalising learning for students, outlining the connection between AFL and personalising learning: "*In guiding, supporting, learning, and knowing. So the children know where they are, where they need to get to, how they're going to get there, why they're doing it*" (LSepInt2). Lucie felt that AFL practice is "*so embedded in our practice, that I'm not sure I could take it away*" (LSepInt2).

A disparity was evident between the extent to which Lucie thought AFL was embedded in her practice and that which was observed in the classroom observations. In Observation 1 (LJulyOb1), the learning intention and purpose for the session was unclear. The dialogue indicated that the session focused on the task of making a movie rather than the learning itself, that of reflecting on learning goals. The first part of the session involved the teacher guiding students through an activity sheet that was linked to "*what we have been learning*" over the term which the teacher explained later in the session:

> *That bit is the example … we were just having a wee practice, because we haven't done reading for a wee while because we had art week last week. So we were just remembering what we had been doing, so that is why we just did that bit first.*

Lucie modelled how to use the ipad to make the movie. Students had a sheet that explained the "*pattern*" of the movie and they were asked to use this to make their movie.

AFL was present in other aspects of the classroom. When utilising AFL as a scaffold for personalising learning, the following AFL principles were evident in Lucie's classroom observations: using evidence to identify needs, communicating student needs, differentiating instruction, reflecting on learning and ongoing monitoring to inform planning.

4.7.1.1.   Using evidence to identify needs

Identifying student needs enabled Lucie to know what it was that they needed to learn in order to address that learning need as "*it* [learning] *all meets the goal, that's where it's all coming from. So their needs*" (LSepInt2).   In Interview 2 (LSepInt2), Lucie spoke about how she had "*chosen inference and predicting*" as student goals in reading as she "*found at the end of testing last term that there was a real need for the same sort of skills, and that, and so that's why I made it a focus*".

4.7.1.2.   Communicating student needs

Student needs were communicated to students and parents as learning goals. Lucie described how:

> We *do goals which are linked into their learning ... into everything that we do ... so at the start of each term they go on and they put in their goals. At the moment they are teacher directed ... but then in our guided sessions²⁴ we went through and showed them and talked about their goals and looked at them. So they know what's there and they definitely know their goals and we refer to them all the time.* (LMayInt1).

She explained that when students were entering their goals it was "*taking up just a lot of teacher time and we didn't really see the value in it".* Lucie believed that, "*Ideally they* [learning goals] *would be, with AFL pedagogy, more student-directed*" (LMayInt1). These goals were evident in KnowledgeNET which is detailed in Section 4.8.1.2.

4.7.1.3.   Differentiated instruction

Learning was planned for and guided by Lucie: "*We are looking at those goals and talking about those goals every day and thinking about the success and how we're going to achieve those goals*" (LSepInt2). Lucie grouped the students according to these common needs in reading, writing and maths, as each student in each group

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²⁴ A teacher (or adult) teaching a pre-planned lesson designed to meet a specific learning need or outcome of a small group of students.

had the same goal, labelling each group for identification purposes (LAugOb2). Lucie directed groups to their designated activity, one group at a time (LJulyOb1, LAugOb3). For example she said, "*Smurfs ... You are on KnowledgeNET. I want you to go on KnowledgeNET reflections. Ok. Smurfs off you go*" (LAugOb3). The tasks varied between the two observations but included one session with Lucie focused around a specific learning intention.

During each of the observations (LJulyOb1, LAugOb2, LAugOb3), Lucie spent some time during the session moving between individual students as they worked, asking questions of their progress and working one-to-one with students. In Observation 3 (LAugOb3), one child was working on a laptop and as Lucie moved past she looked at what the child was doing and prompted, "*You need to go to the classpage*". She bent down to the child and showed them where to go on KnowledgeNET.

4.7.1.4. *Students reflecting on learning*

Lucie supported students in reflecting on how they had progressed towards their goal once they had achieved it, which was usually at the end of the term. Reflecting on learning showed that they "*understand it and can talk about it and can do it*" (LSepInt2).

In Interview 1 (LMayInt1) Lucie told how:

> *In the guided session we will relook at what we have done and then we will look at each of their goals and they will talk about how they have done in each of their goals ... so they can show evidence of how they have done it.*

This was evident in Observation 1 (LJulyOb1), detailed in Section 4.7.1, when students were set up to make a video showing their evidence for achieving their reading goal for the term.

4.7.1.5. *Ongoing monitoring to inform planning*

Lucie monitors student learning constantly and modifies her classroom programme to reflect what she has learned about each student's needs:

There's continual check-in through that goal to see how you're going or through that learning intention ... I have found from initially what you think ... is going to be their goal, when you get into it you might actually need to go backwards in order to go forwards or sideways in order to go forwards. (LSepInt2)

4.7.2. <u>Utilising teaching and learning strategies</u>

Lucie used some specific teaching and learning strategies to personalise learning in her classroom. She saw her role as a facilitator of learning.

4.7.2.1. *Teacher as facilitator of learning*

Lucie saw her role when personalising learning as "*more of a facilitator and actually guide the thinking*" (LSepInt2). In the small group sessions, Lucie led discussions, asked open-ended questions and prompted students for responses, linked new learning with prior learning and modelled strategies to students (LJulyOb1, LAugOb2, LAugOb3). For instance, in Observation 2 (LAugOb2), Lucie worked with one reading group on predictions getting them to discuss their ideas with their buddy before contributing to a group brainstorm from which a definition was co-constructed:

> Lucie - *As I told you, l have put your goals on KnowledgeNET for you. Ok? When you get a chance to look at the goals on KnowledgeNET you will find that one of your goals, which is the goal we are going to be talking about today, is to do with this ...*
> Lucie started writing 'predictions' on a blank page in the modelling book.
> Sam – *Predictions!*
> Lucie – *Yes. What do you think that word means? Talk about it with ... You two and you ... Discuss. What do you think that word means?*
> Students talk to each other.
> Lucie – *Ok. Who came up with a good idea about what prediction means?*
> Colin - *You guess what something is gonna be like. For instance, you read the title and predict what you think is going to happen in the story.*
> Lucie writes down the key words in the modelling book.
> Lucie – *So, how are you doing to do that? If I said to you predict ... How would you do that?*
> Jacqui – *Guess!*
> Lucie wrote it in the modelling book.

4.7.3. Curriculum entitlement and choice

Lucie provided students with curriculum entitlement and choice. She allowed students some choice in their learning and valued a varied curriculum.

4.7.3.1. Student choice, interests and independence

For Lucie, one key way that she was now personalising learning "*to some extent*" was *"because there is choice in what they can do but I think it is still very driven by me at this point*" (LSepInt2). Lucie felt she had brought 'choice' into her classroom through the use of the 'Inference Wall' as an activity on the reading tumble[25] (LSepInt2). During Interview 2 (LSepInt2), Lucie described how this was new to the class structure and how it worked in reading: "*They* [students] *all have to meet the same learning intention, but the way that they meet that learning intention is different*". The inclusion of the 'Inference Wall' was evident in Observation 3 (LAugOb3). On one wall in the classroom, there were a number of activities in small pouches. Lucie took the group who were on that activity over to the wall and asked them one by one, "*Which activity would you like to do? Which activity would you like to start on?*" Once a student had selected the activity, Lucie gave them the activity sheet and they moved away. At the end of the session, Lucie called the group of students back over to her, looked at the activities the students had done and signed them off on the contract sheet in their books. Lucie found that the students "*were really engaged with it and … it ended up that they wanted to do everything*" (LSepInt2).

In enabling students to make some decisions about themselves and their learning, Lucie felt that this allowed students to:

> *Follow their interests a lot more, their passions, which is going to engage them and make them more passionate about learning … You obviously get better results when the kids are engaged and passionate.* (LSepInt2)

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[25] A table which shows the tasks each group are to complete during each part of the session.

4.7.3.2.   Varied curriculum

Lucie believed that providing greater scope in the curriculum would enable learning to be further personalised for students. During Interview 2 (LSepInt2), Lucie expressed her concern about the heavy focus on "*reading, writing and maths … I think we've got quite bogged down in those being the core subjects and … placing the importance around those things*". She discussed the "*pressure to make sure that you lift the achievement of reading, writing and maths*" and "*then you're comparing that against other teachers*". She explained, "*If something has to give in your day, it's going to be one of those other subjects".* Lucie said, "*We need to diversify … so that we are covering all of the curriculum*".

The evidence in this section has shown that Lucie is personalising learning in her classroom through the use of AFL principles to scaffold learning around student needs in reading, writing and maths. Lucie's teaching was centred on students' needs, catering for these within the classroom programme, closely monitoring student progress through assessment and reflection and making changes to the teaching programme as needed. She saw personalising learning as closely linked with student choice, incorporating the 'Inference Wall' into her normal classroom organisation.

4.8. Question Two - How is Lucie using an LMS to personalise learning?

Four key components of personalising learning were evident in the way that Lucie used KnowledgeNET: (a) assessment for learning (b) curriculum entitlement and choice, (c) teaching and learning strategies, and (d) strong relationships.

4.8.1. Assessment for learning

Lucie is personalising learning in KnowledgeNET by using AFL principles to scaffold learning. Specifically, she used KnowledgeNET as a tool to communicate student needs, differentiate instruction, inform future planning and to provide an avenue for feedback, feed-forward and reflection.

4.8.1.1. KnowledgeNET as tool

For Lucie, KnowledgeNET was a place to document parts of the AFL process and a place:

> *To support obtaining their goals ... through peer feedback, through self-assessment ... when you're putting up goals and reflecting on them and talking about them, when you're putting up evidence in the learning journey and sharing them with a peer* (LSepInt2).

Lucie saw KnowledgeNET as "*providing a safe environment where they* [students] *... engage with their teacher and their learning and their peers*" (LSepInt2).

4.8.1.2. Communicating student needs

Student needs were communicated to students and parents as learning goals, uploaded by Lucie into KnowledgeNET as shown in Figure 4.10 (LJulyLMS1, LAugLMS2).

Description
I am learning to use comprehension strategies to understand the author's message

Reflection/Goals
I can ...
- identify parts of the text that we are not sure about.
- read between the lines to understand what's happening in the story
- to make a prediction and give evidence from own experience to justify predictions.

Figure 4.10: Student learning goal in KnowledgeNET

As discussed by Lucie in Interview 1 (LMayInt1) and detailed in Section 4.7.1.2, the learning links reading task for one group during Observation 2 (LAugLMS2) was to visit their learning goals on KnowledgeNET, shown in Figure 4.11. In Observation 2 (LAugOb2), 8 students were working on the activity.

TERM 3

1-2	Have a look at your learning goals. Read them to a buddy. In your reading books,
	1. write down any words you are not sure about
	2. which goals you think will be easy to achieve
	3. which you think you might need more work on

Figure 4.11: Learning links goal activity

4.8.1.3. *Differentiated instruction*

Lucie spoke in great detail about "*the way I structure* [KnowledgeNET]" to address student learning needs in reading, writing and maths (LMayInt1, LSepInt2). In Interview 1 (LMayInt1), Lucie outlined how she created "*learning links for each of the groups*" in KnowledgeNET where they "*have their learning intention for that week, and then they might have three different hyperlinks that they can go into, and they can practice that skill … they choose what they want to do*".

Lucie had a number of learning links pages set up in KnowledgeNET. Each group had a page where Lucie added in a new learning intention and hyperlinks to related activities. Lucie explained that the learning links changed "*depending on whether they have achieved the learning intention*" (LMayInt1). The setup for one reading group is shown in Figure 4.12 as seen in KnowledgeNET (LAugLMS3).

	Goal reflection We have been learning about prediction. Write how you think you are going with your goal. Have you achieved it or do you think you need more work on it?	
4	WALHT infer the hidden meaning	Watch each clip and think about the questions below. Discuss your answer with a buddy. Video A What is inferring like? Video B Which 2 clues do they discuss that can help you to infer? Video D Which clues did she use this time to help her infer?
5	WALHT infer the hidden meaning	Guess the riddle - Guess the object by clicking on the clues Multi choice - Read the passage and choose the correct inference Pop-ups - Choose the correct answer from the drop down box

Figure 4.12: Learning links activity for a reading group

Learning links were evident for Week 2, Term 3 (LAugLMS2) for four math groups and four reading groups and in Week 5, Term 3 (LAugLMS3) for three maths groups, one writing group and four reading groups. This indicated that KnowledgeNET was used more strongly in reading and maths, than in writing.

4.8.1.4. Ongoing monitoring to inform planning

Using KnowledgeNET to monitor student progress and inform future planning was a key step for Lucie in personalising learning for her students. Lucie explained in Interview 2 (LSepInt2) how she tried to use entries and information in KnowledgeNET to inform her planning in order to cater for the students' learning needs. She does this "a*s often as possible. When they have written … I try and make sure that I look on it each day*" (LSepInt2).

Specifically, Lucie posted reflective questions to the learning reflections section in KnowledgeNET to get a glimpse into how Art Week had gone for the students as shown in Figure 4.13 (LJulyLMS1).

Figure 4.13: Art Week reflective question and student response

Lucie designed a page for a reading group to gain insight as to how the students were progressing with their learning goal based on prediction and included it as a tumble activity (LAugOb3). Figure 4.14 is an example of a student response to her questions around their understanding of prediction.

Figure 4.14: Student responses to learning links questions

There were two learning journal entries during Week 10, Term 2 (LJulyLMS1). The videos were of students reflecting on how they had met their reading goal for the term, linked in with the group session in Observation 1 (LJulyOb1) as described in Section 4.7.1.

4.8.1.5. Feedback and feed-forward

Lucie saw comments on learning in KnowledgeNET as a way "*to support* [students in] *obtaining their goals*" (LSepInt2). In Week 5, Term 3 (LAugLMS3), Lucie responded to student posts about prediction as shown in Figure 4.15. Six students responded to other students' comments as shown in Figure 4.14. These were the only posts evident during the LMS data collection times, indicating that this aspect was used rarely.

Well done Simpsons. You have all given very clear definitions of what prediction is. Xavier, I liked the way you gave an example of something that you can predict. I predict that other groups will try and make some predictions too in their posts!

For those of you that have not yet posted a comment, see if you can remember what 3 things help us to make predictions.

I look forward to reading everyone's posts.

27 Aug 2013
Teacher

Figure 4.15: Teacher response to student comments on learning links

4.8.1.6. Students reflecting on learning

Lucie encouraged students to reflect on their goals at the end of the term. Over the week of Observation 1, during which students had a session with Lucie about reflections, 51 students made comments on their goals in KnowledgeNET (LJulyLMS1). The writing goals were written comments with a PDF example of their work, as shown in Figure 4.16. The reading and maths goal reflections were videos. Lucie felt that students were "*very honest about it* [reflections] *and they know what they need to keep working on*" (LMayInt1).

Figure 4.16: Writing goal evidence and student comment

At the end of the term (LJulyLMS1), Lucie commented on student goals in KnowledgeNET. The comments were either written on the sample which was uploaded to KnowledgeNET, as shown in Figure 4.17, or a typed response in KnowledgeNET, as shown in Figure 4.18.

Figure 4.17: Teacher response to Term 2 writing goal on PDF sample

Figure 4.18: Teacher response to Term 2 reading goal comment

4.8.2. Curriculum entitlement and choice

Lucie provided students with curriculum entitlement and choice by enabling students some choice in their learning.

4.8.2.1. Student choice

Lucie used KnowledgeNET to "*give the students a lot more choice on what they do and they can take whatever path they choose to take*" (LMayInt1). Lucie gave the following example in maths:

> *Part of their multiplication is re-enforcing their times tables. And so there is lots of timetables games there, that they need to choose which level they are at. So they need to go in … and rather than practicing their 2 x table … they need to go in and think 'well, I need to practice my 12 x tables' so I will go in and do my 12's. So there is room for them to make that choice and do that.* (LMayInt1)

The multiplication page in the KnowledgeNET was not accessible to the researcher during data collection times.

4.8.3. Utilising teaching and learning strategies

Lucie used KnowledgeNET to provide a variety of pathways for students to access learning.

4.8.3.1. A variety of pathways to access learning

Providing a variety of resources, websites, quizzes, videos, games and pictures (LJulyLMS1, LAugLMS2, LAugLMS3), for students to choose from, was seen as a way of personalising learning (LMayInt1). Lucie spoke about using the learning links to provide "*lots of sort of gamey things that were practicing different skills*"

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and "*all meets the goal, that's where it's all coming from - so their needs*" (LMayInt1). Figure 4.19 shows three online maths games aimed at the same goal (LAugLMS3).

5	WALHT round numbers to the nearest 1000	Target rounding - Hit the target to round it to the nearest 1000 Round to the nearest 1000 The crazy counting machine - See how few clicks it takes to get the correct number

Figure 4.19: Three online maths activities for a maths group

KnowledgeNET also provided the students with a variety of ways to communicate their learning. They were able use audio, video or type function to respond to questions, post reflections and upload evidence. The KnowledgeNET data (LJulyLMS1, LAugLMS2, LAugLMS3) showed that students tended to use the typed comment function on learning links pages, as shown in Figure 4.2, and the video function, when uploading evidence and reflecting on learning goals.

4.8.4. Valuing strong relationships

Lucie acknowledged that a key aspect of strong relationships was parental involvement in learning.

4.8.4.1. Parental involvement and open communication around learning

Lucie described the role that KnowledgeNET has to play in building partnerships between home and school in Interview 2 (LSepInt2). She said, "*I think the main way to do it is not within KnowledgeNET. I think that needs to be a face-to-face interaction … initially, it's pretty important because things can get very misconstrued when you put them online*". Lucie felt that KnowledgeNET enables the teacher "*to see that they're* [parents] *valuing, that they're really interested and engaged in … supporting their child at home*" and "*they can be involved in their child's learning*".

The data in this section has shown that Lucie uses KnowledgeNET to personalise learning by building upon AFL pedagogy, as integrated within elements of classroom practice. She incorporated aspects of KnowledgeNET into the classroom tumble as an activity to support students with their learning or as a place to document achievement of their goals. The way and amount that KnowledgeNET was used varied from week to week and between curriculum areas.

Lucie faced a number of challenges when personalising learning which emerged from the data analysis. These are discussed in the next section.

4.9. Challenges to personalising learning in Lucie's classroom

Lucie described challenges that she experienced when personalising learning for her students: student skills, student learning styles, time, teacher knowledge and understanding, teacher control and parental involvement.

4.9.1. Student skills

Lucie felt that some primary-aged students did not have the skills needed to manage their learning and be independent and so personalising learning was not suitable for everyone (LSepInt2). During Interview 2 (LSepInt2), she said, "*Independence is a lot more encouraged and those children who aren't quite as independent, they need that support*".

4.9.2. Student learning styles

Lucie was apprehensive about the busyness of a personalising learning classroom for some students. *"Those ones that, when there are different things going on and children are at different places, all doing different things, it's just a bit too much. There's too much going on for them … they get a bit side-tracked"* (LSepInt2). While Lucie is concerned for these students, she also acknowledges, "*As a teacher I guess you would … make sure that it … does work for them*" (LSepInt2).

4.9.3. Time

For Lucie, lack of time during class appeared to be a challenge for her as, "*There's only so many hours in the day and so many days in a week*" (LSepInt2). In Observation 2 (LAugOb2) Lucie said to a group, "*Oh my goodness! We are running out of time so we will have to continue on with this tomorrow*" and in Observation 3 (LAugOb3) she said, "*We are coming back to this tomorrow. Just because we have run out of time and I would like to move on".* Lucie found the KnowledgeNET process, "T*ime consuming but well worth it when you see the kids buzzing ...*" (LMayInt1). Lucie noted, "*In an ideal world I would monitor anything they're putting up, I would monitor and have a look at, but I guess you're restrained by time"* (LSepInt2).

4.9.4. Teacher knowledge and understanding about personalising learning

Lucie was unsure about a number of components of personalising learning which left her questioning her actions and what she needed to do. When she spoke about the way she had set up the structure in her classroom, she commented:

> *I don't know. It's not* [personalising learning]*. I wouldn't call it personalised learning but I still think it's ... I'm unsure. I don't know ... I'm not sure what that looks like as yet but that's my step towards it at this stage.* (LSepInt2)

In Interview 2 (LSepInt2), Lucie described the professional reading she was doing and how she had *"definitely ... moved ... in terms of my thinking and in terms of what I'm doing in the classroom"* (LSepInt2). This was evident in the introduction of the 'Inference Wall' contract as described in Section 4.7.3.1.

4.9.5. Heavy teacher control in KnowledgeNET

KnowledgeNET in a classroom is "*obviously up to the individual teacher how it is used, and what they put on there, and how they choose to use it*" (LMayInt1). In Interview 1 (LMayInt1), Lucie described "*the way I structure it* [KnowledgeNET]" emphasising the teacher driven component of KnowledgeNET. Lucie saw the

control that she has over the way that KnowledgeNET is designed as an advantage (LMayInt1).

4.9.6. <u>Parent involvement</u>

Lucie felt that "*a lot of parents … aren't logging in because they don't really understand … they're not really sure that that's an environment that they are confident with, or they are ESOL*[26]" (LSepInt2). Lucie commented on the teacher's role in encouraging parents to play a more active role in KnowledgeNET, "*I think it's a matter of us … making sure that we get parents involved by using the children and providing hooks for them to actually go in*" (LSepInt2).

The comments in this section highlight the challenges which Lucie faces when personalising learning and her concerns around its suitability for some of the students in her class.

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[26] English for Speakers of Other Languages. Learners who are learning English as an additional language or who use a first language other than English.

4.10.   Teacher Three – Yvonne

Yvonne is a Year 1 and 2 teacher who is in her 19th year of teaching. She has been teaching at the research school for 15 years, with the last seven years in a full-time role. Yvonne has a Bachelor's degree in Education. She is the leader of art and the New Entrants[27] (NE) to Year 2 Whānau team.   Yvonne teaches in a collaborative environment with one other teacher.

She teaches in a single-celled[28] classroom adjoined to her teaching partner's single-celled classroom on the bottom level of a newly built area of the school. The classroom has four low tables with six chairs around each, placed around the classroom space. Along one wall there are six desktop computers. At the front of the classroom is an IWB with a large clear carpet space in front of it. To the left of the IWB is a cupboard where the ICT equipment is housed. At the time of the observations, this cupboard housed four mini-laptops and two ipads which the students were able to access at any time.   34 students, out of a possible 51 students, chose to participant in the project.

4.11.   Question One - What does personalising learning look like in Yvonne's classroom with an LMS as a core component?

Three key components of personalising learning were evident in Yvonne's classroom: (a) using assessment for learning as a scaffold around which personalising learning was constructed, (b) valuing curriculum entitlement and choice and (c) utilising teaching and learning strategies.

4.11.1. Assessment for learning

Yvonne saw that AFL played a key role in " *giv*[ing] *them* [students] *a sense of belief in themselves that they can achieve and also you give them feedback about where to go to next to extend their thinking, so it plays a major part*".   Yvonne

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[27] A child starting primary school for the first time between July (when the school roll is counted) and 31 December of a school year, and aged between five and six.
[28] Single enclosed classroom with one teacher and one class.

appeared to have a clear understanding of AFL practice, describing different principles of AFL and how they worked in her classroom (YSepInt2).

When utilising AFL as a scaffold for personalising learning, the following AFL principles were evident in Yvonne's classroom observations: using evidence to identify needs, communicating student needs, differentiating instruction to meet students' needs, ongoing monitoring to inform planning and feedback, feed-forward and reflecting on learning.

4.11.1.1. Using evidence to identify needs

Identifying student needs enabled Yvonne to know what it was that they needed to learn in order to address that learning need. She "*assess*[ed] *and observe*[d] *the children*" identifying their strengths and weaknesses (YSepInt2).

During Observation 2 (YJulyOb2), it appeared as though Yvonne had selected the reading goal for the group of students as indicated in this extract:

> Yvonne – *What are we learning this week? Sally can you read it in a big voice?*
> Sally looks at the modelling book placed in the middle of the floor and reads.
> Sally – *We are learning how to identify the main ideas in the story.*
> Yvonne – *Good reading! So we are identifying main ideas in the story. This is your learning intention for the term.*

She was beginning to have students more involved in the writing assessments. In Interview 1, Yvonne outlined how the goals were identified in writing:

> *They look at their piece of writing … that they did at the beginning of the term and they critique where their learning needs are. So we might have a few where different children have different views. They might have a few but we compromise it into one … that everyone will need to work on.* (YMayInt1).

4.11.1.2. Communicating student needs

In Interview 1 (YMayInt1), Yvonne described how group-based learning goals were placed on KnowledgeNET at the beginning of each term. These goals were

evident in KnowledgeNET as detailed in Section 4.12.1.2. "*Students put their own learning intention and success criteria up*" (YMayInt1) as evidenced when Yvonne worked with a group of students to enter their goals and success criteria into KnowledgeNET during Observation 2 (YJulyOb2). The students logged into their learning journey area in KnowledgeNET:

> Yvonne - *Put your mouse there and you need to type what we are learning this term. So what are we learning this term? You need to type in 'identify the main ideas in the story'. Can you type that in?*
> Yvonne looked at the students. Students started typing.
> Yvonne turned to the student at the IWB.
> Yvonne – *Nate, can you type this in … 'Identify the main ideas in the story'? Sound it out Nate.*
> Nate started typing. All students were typing. Some students read aloud as they typed.
> Yvonne - *Ok. When you have done this one. Down here is where you put your success criteria.*
> Yvonne pointed to the relevant section in KnowledgeNET.

4.11.1.3. Differentiated instruction

Yvonne established groups according to common needs. "*The goals … inform their guided sessions in their group*" (YMayInt1). She felt when personalising learning it is the responsibility of the teacher to provide "*opportunities for students to bring out the best of their ability*" (YMayInt1). Each of the in-class observations (YJulyOb1, YJulyOb2, YAugOb3) showed that Yvonne worked with different groups of learners throughout the sessions, focused around a specific learning intention. In Observation 1 (YMayInt1) for instance, Yvonne was sitting on the floor with a group of 5 students and they reviewed their learning intentions and success criteria:

> Yvonne – *Today what are we learning, Penny?*
> Penny – [reading from the modelling book] *Today we are learning to assess and reflect on our report writing.*
> Yvonne – *OK. How do we know that we can successfully achieve our learning intention?*
> Students – *Follow the steps?*
> Yvonne– *Follow which steps?*
> Jack – *The title, introduction, body, paragraphs and conclusion.*

During each observations (YJulyOb1, YJulyOb2, YAugOb3), Yvonne spent time moving between individual students as they worked, asking questions of their progress and working one-to-one with students. In Observation 2, (YJulyOb2), three girls were sitting at a table with an ipad playing a drawing game. Yvonne approached them and discussed with them the importance of making choices to extend their learning. Each of the girls went to a reading learning links activity and chose to listen to a story. Another group of children were trying to find the learning links section in KnowledgeNET with little success. Yvonne moved them together and gave them instructions as to how to find it. Once the students were in the correct place, Yvonne moved back to the small group.

4.11.1.4. Ongoing monitoring to inform planning

Monitoring student progress to inform future planning was a key step for Yvonne in personalising learning for her students. Yvonne explained, "*I need to assess myself, in a sense that, okay, this is what I've planned for those students. Where are the holes? Where are the strengths? Do I need to continue this lesson more or do I need to move on to extend the kids?*" (YSepInt2). Yvonne made observations during guided sessions with a group and made notes in the modelling book which she used to "*plan according to where their needs are*" (YMayInt1), as observed during Observation 3 (YAugOb3).

4.11.1.5. Feedback and feed-forward

During Interview 2 (YSepInt2), Yvonne spoke in detail about how "*feedback and feed-forward* [are] *very important to promote their* [student] *learning*", giving students "*a sense of belief in themselves that they can achieve*" and "*where to go to next to extend their thinking*". She described the importance of teaching students how to give effective feedback (YMayInt1).

A way of providing feedback, Yvonne explained was "*one to one conferencing … we looked at the comments [on KnowledgeNET] … how can you make your paragraph*

stronger? Your ideas stronger?" (YSepInt2). This was not evident in the observations.

4.11.1.6. Students reflecting on learning

Yvonne encouraged the students to reflect on their learning. Each group session (YJulyOb1, YJulyOb2, YAugOb3) ended with Yvonne asking the students if they had met the success criteria and how they thought they went with their learning. In Observation 3 (YAugOb3), Yvonne had uploaded some photos to the learning journey on KnowledgeNET for each student in the maths group:

> Yvonne – *There are 2 things you need to think of.*
>   1. *Can you tell me what you learnt yesterday*
>   2. *What did you learn today?*
> Students stated calling out responses.

At the end of the term, the students reflected on their goals. Yvonne modelled this with the students before they entered it into KnowledgeNET. In Observation 1 (YJulyOb1) Yvonne worked with a writing group, "*learning to assess and reflect on our report writing".* She modelled the process on the IWB, taking the students slowly through the process of marking on a Report Writing Assessment sheet and then seeing what they needed to work on next time (YJulyOb1). This is evident in this extract:

> Yvonne– *This is a piece of writing that Emily did in her book.*
> Teacher asks Emily to stand up beside the IWB.
> Yvonne – *Emily can you explain to everyone, why are these highlighted and why are these highlighted?*
> Emily points to the title on her sample and to where it says title on the assessment sheet.
> Yvonne - *So what was the first thing you needed to do?*
> Students – *Title*
> Yvonne – *How did you know you had to look at the title? Where does it tell you? Why is the title here (points to criteria) and the title the same colour?*
> Emily – *It's the title.*
> Yvonne – *Good Girl!*
> Yvonne – *Looking over here at the assessment sheet, has she achieved this? Has she put a title on her report?*
> Students – *Yes*
> Yvonne – *Fabulous! What about this one? What is this one you have to look at?*
> Emily – *Opening Paragraphs*

> Yvonne – *Yep. This is not very clear here.* [Her opening paragraph]. *But if you see on the sample here* [teacher shows the student's book]*, she has coloured this bit* [points to happy face and the opening paragraph*] tells me that she has successfully achieved writing an opening paragraph.*

A PDF of this sheet was uploaded to each student's writing goal in KnowledgeNET and this also included teacher marking (YJulyLMS1) as shown in Figure 4.20.

Figure 4.20: Term 2 writing assessment sheet

4.11.2. Utilising teaching and learning strategies

Yvonne used some specific teaching and learning strategies to personalise learning in her classroom. She saw her role as a facilitator of learning, creating alternative pathways for students to access their learning.

4.11.2.1. Teacher as a facilitator of learning

Yvonne's role was a facilitator of learning. The observations (YJulyOb1, YJulyOb2, YAugOb3) showed that when running the small group sessions she led discussions, asked open-ended questions, linked new learning with prior learning and used modelling to guide the students through the learning process. In Observation 1 (YJulyOb1), Yvonne modelled to the students how to determine if

they had achieved the success criteria for their piece of writing. This is described in Section 4.11.1.6.

4.11.2.2. A variety of pathways to access learning

Yvonne spoke about personalising learning saying, "*It's about how you provide environment and resources to support that child's … learning*" (YSepInt2) and "*different pathways to achieve the same goal that you set*" (YMayInt1). The in-class observations showed that the students had access to a variety of resources. Students used an interactive 100's Board[29] during that maths observation (YAugOb3), laptops and the IWB during writing (YJulyOb1) and an ipads, ipods, and computers in Observation 2 (YJulyOb2).

4.11.3. Curriculum entitlement and choice

Yvonne provided students with curriculum entitlement and choice by enabling them some choice in their learning.

4.11.3.1. Student choice

One key change in practice towards personalising learning that Yvonne highlighted, was that she had "*started implementing a lot of student voice and choice,*" (YMayInt1) "*rather than me giving them a set task they have to do*" (YSepInt2). These changes were made in reading and writing. Yvonne felt she set her reading and writing sessions up so that "*in a way like half in half, half directed by the teacher but the choices are to the student, how they want to utilise those literacy times to support their learning*" (YSepInt2). She moved away from the tumble based system which was evident in Observation 1 (YJulyOb1), towards what was called a Literacy Wall, evident in Observation 2 (YJulyOb2). A part of this was the move away from separate reading and writing sessions towards an

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[29] A board which has the number for 1 to 100 on it. Number can be flicked back to hide them.

integrated literacy time as evident in Observation 2 (YJulyOb2). Yvonne explained how this worked:

> *During the literacy time … students reading with me or writing with me … in their private groups, and the rest of the children choose from the list on the wall which activity they would like to do first … There is a 'must do' one … That's the one that they all have to complete … as long as they complete it within the literacy time … I conference with them to check … Just quickly get them to explain what they have done* (YSepInt2).

Observation 2 (YJulyOb2) was a literacy lesson, students who were not working with Yvonne were scattered throughout the room working on a range of activities, all of which were listed on the Literacy Wall. These included compound word games, comprehension activities and learning journals. The 'must do' activity was 'Words in 10 minutes'[30]. Observation 3 (YAugOb3) was a maths lesson based on a tumble based system. There was a chart which told the groups which activity they were to do, in which part of the session, as directed by Yvonne.

The evidence in this section has shown that Yvonne uses AFL as the scaffold to personalise learning for students in her classroom. She utilises the learning goals developed at the beginning of the term to inform student groups and the teaching and learning which occurs. Yvonne restructured her reading and writing programme to enable the students more choice throughout the session while also allowing her to run guided sessions with students to address their needs.

4.12. Question Two - How is Yvonne using an LMS to personalise learning?

Three key components of personalising learning were evident in the way that Yvonne used KnowledgeNET: (a) assessment for learning, (b) teaching and learning strategies and (c) valuing strong relationships.

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[30] Students write as many words as they can in 10 minutes.

4.12.1. Assessment for Learning

Yvonne is personalising learning in KnowledgeNET by using AFL principles to scaffold learning. Specifically, she uses KnowledgeNET as a tool to communicate student needs, differentiate instruction, inform future planning and to provide an avenue for feedback, feed-forward and reflection.

4.12.1.1. KnowledgeNET as a tool

For Yvonne (YSepInt2), it appeared that KnowledgeNET was a place to document parts of the AFL process. It was a "*great tool*" which supports students in the learning process, "*celebrating their learning*" and "*reporting to parents*". A key role for her was that KnowledgeNET enabled "*feedback and feed-forward of where they're* [the students] *going*".

4.12.1.2. Communicating student needs

Each student had learning goals and success criteria for the term in KnowledgeNET as shown in Figure 4.21 (YJulyLMS1, YJulyLMS2).
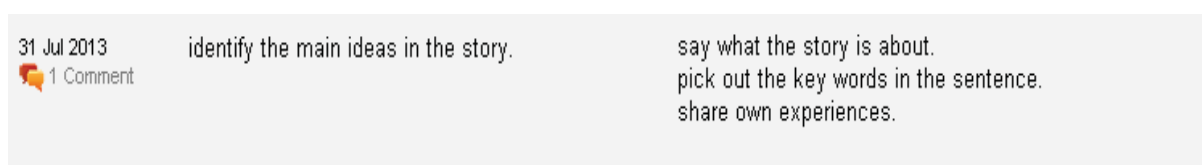
Figure 4.21: Student learning goal and success criteria

4.12.1.3. Differentiated instruction
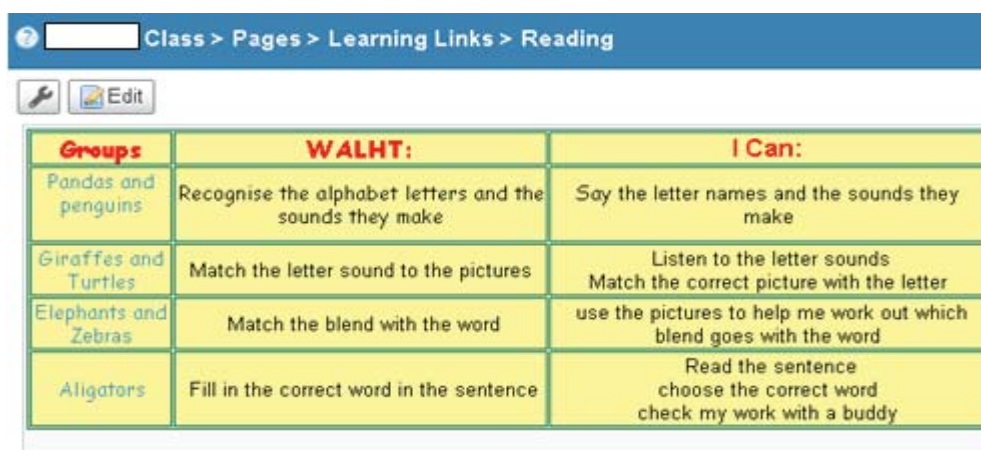
Yvonne had a learning links page set up in KnowledgeNET for literacy which was "*based on their ability groups31 and they have got links set up according to their needs. So example … one groups learning phonics32. So I have a links to a phonic*

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31 The placement of children in one classroom into groups based on their ability.

32 Association between a letter and the sound it represents.

song for them to practice and listen to" (YMayInt1). This page did not change over the duration of the LMS observations (YJulyLMS1, YJulyLMS2, YAugLMS3) indicating that it was not adjusted to meet the changing needs of students. Figure 4.22 shows the literacy learning links page.

Groups	WALHT:	I Can:
Pandas and penguins	Recognise the alphabet letters and the sounds they make	Say the letter names and the sounds they make
Giraffes and Turtles	Match the letter sound to the pictures	Listen to the letter sounds Match the correct picture with the letter
Elephants and Zebras	Match the blend with the word	use the pictures to help me work out which blend goes with the word
Aligators	Fill in the correct word in the sentence	Read the sentence choose the correct word check my work with a buddy

Figure 4.22: Learning links activity for a reading groups designed by Yvonne

4.12.1.4. Ongoing monitoring to inform planning

Yvonne saw KnowledgeNET as helpful in enabling her to personalise student learning from what the students told her. In Interview 1 (YMayInt1), she said:

> *You have got your weekly reflection, your learning journal, your goals and all of that evidence …* [and you] *see their comments and understand what they have learnt. And then for me to look at my planning and go, 'Ok, this group of children needs that learning intention, or needs more work on that area'. So I can pick that group of children up. In the sense that is personalising their learning from what they tell me* (YMayInt1).

Yvonne posted a question in the learning reflection section of KnowledgeNET (YJulyLMS1, YJulyLMS2). This included questions or "*sometimes put pictures as well, it depends what the children have done during the week*" (YMayInt1). Yvonne "*found it beneficial*" that "*everybody can see what they have learnt for that week or what they are finding tricky that week so as they are working collaboratively, together*" (YMayInt1). She also saw it as a way for parents to "*know what's going on in the classroom, and it's very positive*" (YMayInt1). Figure 4.23 shows the question posted in Week 9, Term 2 (YJulyLMS1).
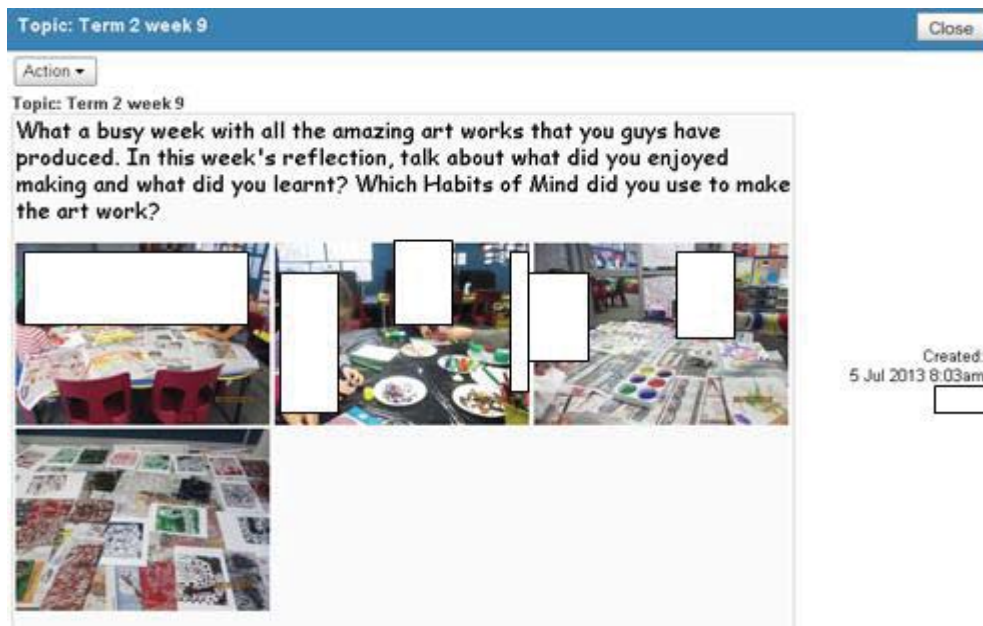
Figure 4.23: Question in the learning reflection section posted by Yvonne

Figure 4.24 shows two responses to a question in the learning reflections section in Week 9, Term 2 (YJulyLMS1).
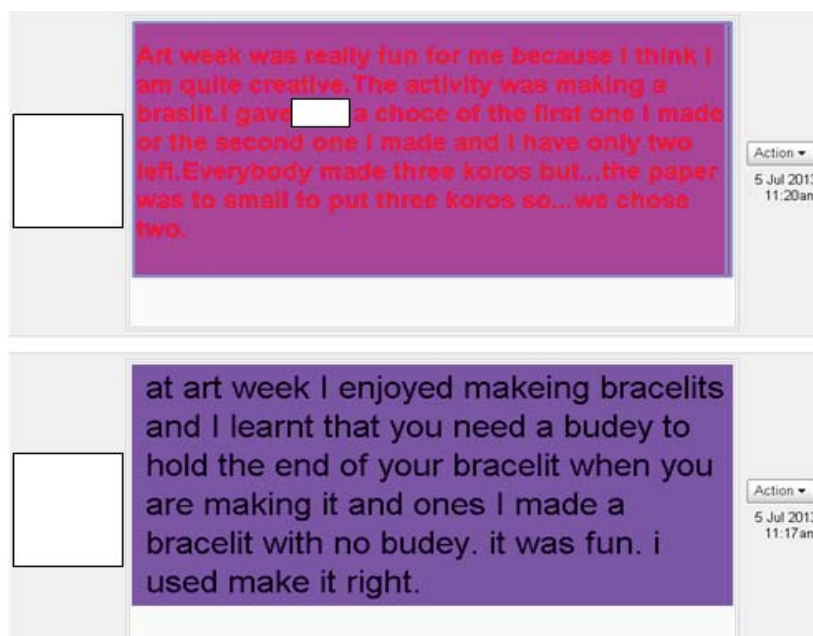
Figure 4.24: Learning reflection response post by students

4.12.1.5. Feedback and feed-forward

Within KnowledgeNET, Yvonne spoke about how learning journals are a great place for students to get feedback. At the moment, she explained she was "*personalising learning with learning journals in writing*" (YMayInt1).

Yvonne explained that with learning journals, "*I read the journals, I comment on it and they make improvements in their writing*" (YMayInt1). One student entry showed obvious changes to the writing (YAugLMS3). Yvonne noted the potential of learning journals as being that the "*children are empowered to write more. There is lots of different feedback given to them, so it's not just a teacher*". Of the six comments on the learning journal entries over the observation periods (YJulyLMS1, YJulyLMS2, YAugLMS3), all of them except for one was by the teacher. An example of a comment by Yvonne is in Figure 4.25. The student comment read, "*Hi Samantha! Like your story and I think it is interesting*". There was limited evidence of regular online feedback by Yvonne or the students, indicating that this aspect was not utilised regularly.
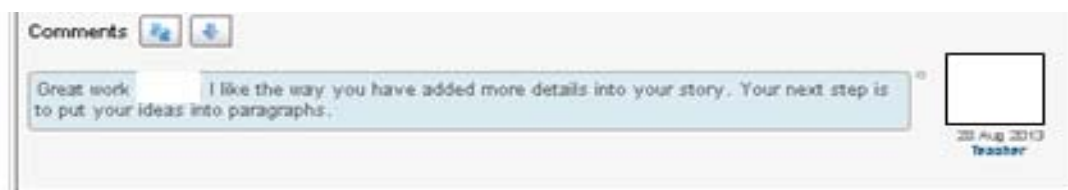
Figure 4.25: A comment on a learning journal entry by Yvonne

4.12.1.6. Students reflecting on learning

Yvonne encouraged students to reflect on their learning during the term in KnowledgeNET, through the use of learning reflections, as detailed in Section 4.12.1.4 and learning journals, as detailed in Section 4.12.2.1. In addition, "*at the end of the term, they* [the students] *reflect on their goal*" *(*YMayInt1). She described how "*it should look like what they have achieved or partly achieved in that goal and what they still need to work on for that goal*" (YMayInt1). They work this out "*by looking at evidence*" from learning journal, workbooks, class modelling book and "*snapshot and video record the evidence*" (YMayInt1).

Over the week of Observation 1 (YJulyOb1), when Yvonne worked with a group of students who were assessing their writing, 18 students uploaded a writing sample which included an assessment sheet, as shown in Figure 4.20. 44 students uploaded a video as evidence of their goal achievements as shown in Figure 4.26.
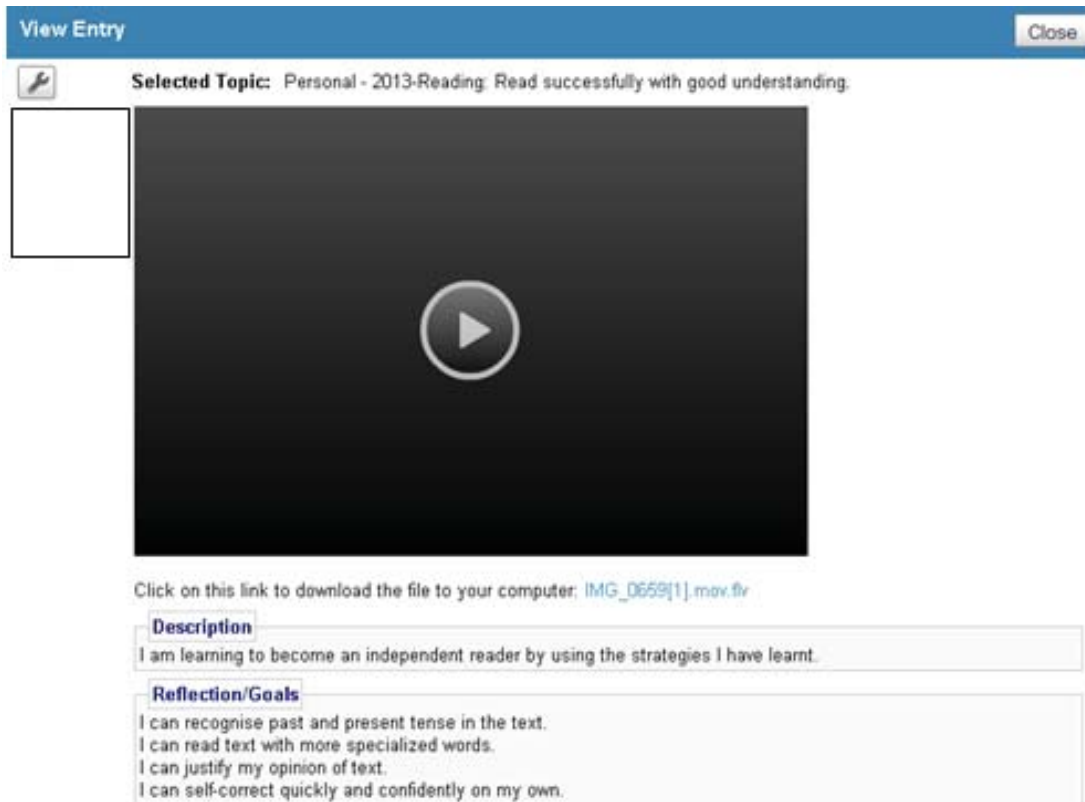
Figure 4.26: Video uploaded to learning journey

7 students had typed a comment on their writing goal, as shown in Figure 4.27.
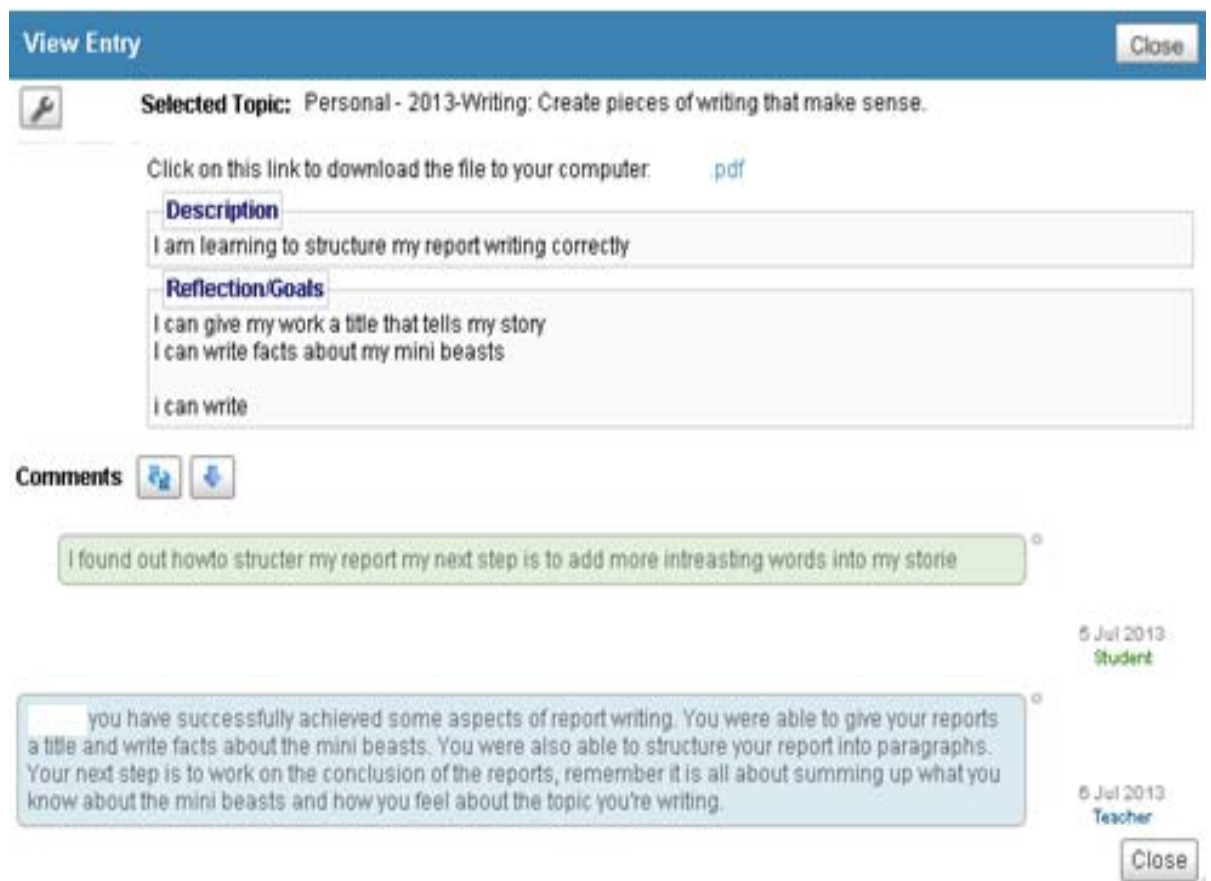
At the end of the term, Yvonne made 60 comments on student goals in KnowledgeNET (YJulyLMS1). Teacher comments were typed into KnowledgeNET as shown in Figure 4.27.

4.12.2. Utilising teaching and learning strategies

Yvonne designed a variety of pathways in KnowledgeNET for the students to use to access their learning.

4.12.2.1. A variety of pathways to access learning

Yvonne spoke about how personalising learning is about giving students *"the choice and the resources, multi resources, they can access in our digital world"* (YSepInt2). One way this was possible was through the use of learning journals *"where children go in, type their writing … if they are not finished they can continue working at home"* (YMayInt1). 19 learning journal entries were evident during

the observation periods (YJulyLMS1, YJulyLMS2, YAugLMS3). Figure 4.28 shows a student's learning journal entry in Week 5, Term 3 (YAugLMS3).
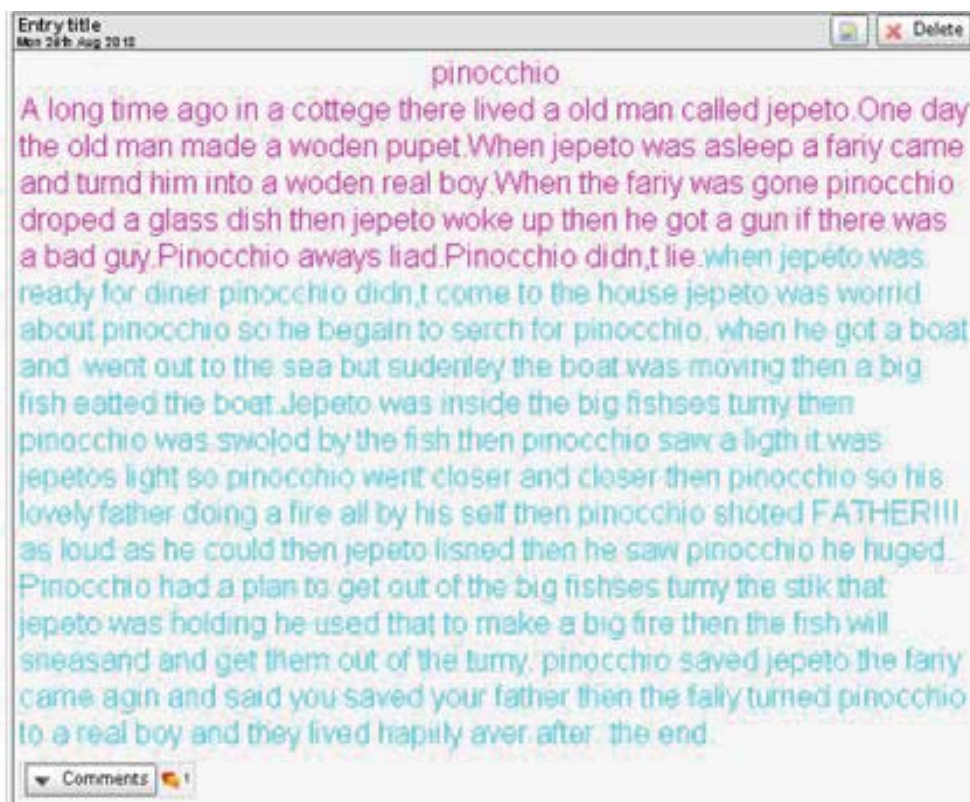
Figure 4.28: Learning journal entry by a student for writing

KnowledgeNET also provided students with a variety of ways to communicate their learning. They were able to use audio, video or type functions to respond to questions, post reflections and upload evidence. Yvonne said that her students mostly "*choose to use video and they talk about their learning, they record it. So they do it all by themselves*" (YMayInt1). This was evident in the KnowledgeNET data (YJulyLMS1) on learning goals, as detailed in the above section and shown in Figure 4.26.

4.12.3. Valuing strong relationships

Yvonne acknowledged that a key aspect of strong relationships was parental involvement in learning, which was enabled by KnowledgeNET.

4.12.3.1. Parental involvement and open communication around learning

Yvonne felt, *"KnowledgeNET opens the doorway for parents, especially working parents, that can't come in to view the classroom and this is a great way to be part of it"* (YSepInt2). She explained:

> *When does a parent come in to view it? How often do you sit down with a book everyday and go back and read page after page, reviewing it. If it is KnowledgeNET it is all set up there. Everything is in one page, you click on the comments, and you read about it, all the comments following each other. You can see the dialogue going! It's so powerful.* (YMayInt1)

The data in this section has shown that Yvonne is using KnowledgeNET as part of her classroom programme, built around AFL pedagogy. She incorporates elements of KnowledgeNET as an activity choice for students during literacy to support students with their learning or as a place to document achievement of their goals in reading, writing and maths. The way and amount that KnowledgeNET was used varied from week to week and between curriculum areas.

As part of exploring the research questions, the analysis of the data highlighted some challenges Yvonne faced when personalising learning. These are discussed in the next section.

4.13. Challenges to personalising learning in Yvonne's classroom

Yvonne mentioned the challenges she experiences when personalising learning for her students – student skill, time, lack of devices, teacher knowledge and understanding, teacher role, limitations within KnowledgeNET and parental involvement.

4.13.1. Student skill

Yvonne felt that some primary-aged students did not have the skills needed to manage their learning, be independent and use KnowledgeNET. She noted, "*You've got to give them all the skills and tools before they can become independent personalising learners*" (YSepInt2). This was reinforced in Interview 2 (YSepInt2), "*I mean they have to know the skills before they know how to personalise themselves*". Yvonne noted, *"The younger ones still need a lot of teacher direction"* and *"you can't just say go and do it".* (YSepInt2).

4.13.2. Time

Time was a barrier for Yvonne when trying to personalise learning in that "*time is an issue, trying to get through all the groups and also give them that computer skill that they need*" (YSepInt2). This was evident in Observation 3 (YAugOb3), after the bell had rung, Yvonne exclaimed, "*That is the end of the maths session and we haven't done a plenary[33]! Can you please leave your work where it is and quickly come and sit on the mat?*"

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[33] The plenary is a series of feedback and reflection questions which brings the lesson to a close and allows the teacher to evaluate its success.

4.13.3. Lack of devices

Yvonne mentioned in Interview 2 (YSepInt2), she "*can't have the whole class working on* [KnowledgeNET] *because there's not enough technology to support the whole class*".

4.13.4. Teacher knowledge and understanding

Yvonne was learning about what personalising learning was and how that transferred into the classroom. In Interview 2 (YSepInt2) she said, "*With all the … professional readings we have read, there are lots of areas to consider within personalising learning*". Yvonne described how her ideas about personalising learning had changed which was reflected in her classroom practice (YSepInt2) detailed in Section 4.11.3.1.

4.13.5. Teacher role

Yvonne thought the way that KnowledgeNET was used in the classroom depended "*on the teacher's … capability and knowledge*" (YSepInt2). In Interview 2 (YSepInt2), she spoke about teacher-driven aspect of KnowledgeNET and some of the components of it:

> *First, in how to utilise the programme, second in providing feedback and feed-forward as to where they're going, and open*[ing] *up the dialogue for the student and between the parties* [parents, students and teacher] (YSepInt2).

4.13.6. Limitations within KnowledgeNET program

Yvonne noted that there were limitations with KnowledgeNET that made it "*difficult to use at times*" (YMayInt1). She explained that it needed to "*be child friendly and working efficiently*" as "*sometimes the program doesn't save and it frustrates the children and when they have their dialogue going … the whole thing disappears*" (YMayInt1). Yvonne also highlighted the structured nature of KnowledgeNET, "*This is where you put your comments in, and this is where you reflect. So it really is not that much of open choice for students*" (YSepInt2). The

LMS observations (YJulyLMS1, YJulyLMS2, YAugLMS3) reinforced the structured nature of KnowledgeNET as aspects looked very similar in structure.

4.13.7. Parent involvement

Yvonne found it difficult to get the parents involved in KnowledgeNET and "*what I'm getting, the feedback, is that they don't know what type of feedback to give to their kids*" (YSepInt2). She established that ESOL parents were "*afraid to go in and put a comment*" (YSepInt2).

The comments in this section highlight the challenges that Yvonne faces when personalising learning. Yvonne questioned the readiness of younger students for personalising learning.

4.14.   Summary

The findings reported in this chapter outlined the components of personalising learning and the role of the LMS (KnowledgeNET), as utilised by three teachers in a primary school. The findings related to each teacher were presented separately.

In Chris's classroom the data highlighted the close connection between her key beliefs about teaching and learning (pedagogy) and the way that KnowledgeNET was used to replicate these beliefs. AFL was the scaffold around which personalising learning was constructed and influenced most elements of the class programme and the way that KnowledgeNET was structured and used. When personalising learning, the focus was on addressing student needs in reading, writing and maths, both in the classroom and in KnowledgeNET and having them actively involved in their learning. Providing students with the flexibility to choose which learning activities they wished to engage in and when to do so, was a key characteristic of personalising learning for Chris. She also incorporated student interests, when possible, and listened to what the students were saying about their learning.

The evidence highlighted that personalising learning in Lucie's classroom was centred on student needs, catering for these needs within the classroom programme, closely monitoring student progress through assessment and reflection and making changes to the teaching programme as needed. She saw personalising learning as closely linked with student choice, incorporating the 'Inference Wall' into her normal classroom organisation. Lucie incorporated elements of KnowledgeNET into the classroom tumble mainly as an activity to support students with their learning or as a place to document achievement of student goals. The way and amount that KnowledgeNET was used varied from week to week and between curriculum areas. Lucie expressed her concerns with personalising learning and its suitability for some of the students in her class.

Yvonne uses AFL as the scaffold to personalise learning for students and KnowledgeNET as a tool to support parts of this process. When personalising

learning, the focus was on addressing student needs in reading, writing and maths, both in the classroom and in KnowledgeNET. She saw personalising learning as closely linked with student choice, incorporating the restructuring of her reading and writing programme to enable the students' choice throughout the session while also allowing her to run guided sessions with groups to address student needs. She incorporated elements of KnowledgeNET as an activity choice for students during literacy to support students with their learning or as a place to document achievement of student goals. Yvonne spoke about how she uses KnowledgeNET to personalise learning for students, yet the way and amount that KnowledgeNET was used varied from week to week and between curriculum areas.

Relationships between the collected data, key findings for each research question and the interpretation of meanings from these findings is presented in Chapter Five - Discussion.

Chapter 5 - Discussion

5.1. Introduction

This chapter draws together the key findings reported in Chapter Four regarding the role that a Learning Management System has when personalising learning for students and discusses these with reference to the literature reported in Chapter Two.

Cross-case analysis of the individual findings for each teacher, presented in Chapter Four, highlighted two key themes. Firstly, the findings revealed the interconnected nature of LMS use and classroom practice. The way that the LMS was used reflected the way that learning in the classroom occurred. As classroom learning reflected components of personalising learning so did the LMS. For these teachers personalising learning was addressed through: (a) the use of assessment for learning to scaffold learning, (b) the selection of specific teaching and learning strategies, (c) enabling curriculum entitlement and choice, and (d) valuing strong relationships. The second theme which emerged during the data analysis was that teachers face challenges when personalising learning which impacts on the degree to which personalising learning occurs. Specifically, personalising learning was dependent on the teacher's overriding pedagogy, knowledge and understanding of personalising learning, school constraints and the perceived capacity of students to be independent learners.

The chapter begins by describing the common approaches that participant teachers utilised to personalise learning for students, highlighting the connection between classroom programme and the structure of KnowledgeNET. The identified approaches reflect the themes which emerged during the cross-case analysis of the findings of participant teachers. These are presented as they relate to the specific features of personalising learning and are backwards-mapped to the core components of personalising learning, outlined in Figure 2.1. These approaches are discussed in relation to the key components of personalising learning, rather than in regards to each research question. The research

questions are specifically addressed in Chapter Six. The approaches are presented in such a way as to enable an image of classroom practice and LMS use to be visualised. Next the factors that influenced the teacher's ability to personalise learning for students, in KnowledgeNET and in the classroom, is outlined. The chapter concludes with a summary of the key discussion points.

5.2. Common approaches that participant teachers utilised to personalise learning for students

The teachers used a variety of approaches to personalise learning for their students, both within the classroom and within the LMS. These approaches were: (a) using assessment for learning as a scaffold around which personalising learning was constructed, (b) valuing curriculum entitlement and choice, (c) utilising teaching and learning strategies and (d) acknowledging the importance of strong relationships.

5.2.1. Assessment for Learning

Analysing the approaches participant teachers used to scaffold their classroom programme and the way they structured KnowledgeNET, suggests that teachers are favouring AFL principles as a key way to personalise learning for students, both in the classroom and in KnowledgeNET. Each of the teachers spoke about the role that AFL had to play in enabling them to identify the learning needs of each student which guided the design of learning experiences. Five principles of AFL became apparent in the findings of each of the teacher participants: (a) using evidence to identify needs, (b) communicating student needs, (c) differentiating instruction to meet student needs, (d) providing effective feedback and feed-forward, (e) enabling student reflection on learning and (f) using ongoing monitoring to inform planning. The degree to which these were evident varied between the teachers.

5.2.1.1. Using evidence to identify needs

Each of the teachers used a variety of assessment and evidence to identify learning needs. Formal assessment included GLOSS test (Chris), writing samples (Chris, Lucie and Yvonne), reading records (Lucie) and observations (Yvonne). Informal assessment were also used by all of the teachers, which included evidence gathered from KnowledgeNET learning reflections, learning links and uploaded evidence of learning. Using evidence to identify student needs is part of the process of monitoring students learning to inform planning, as detailed in Section 5.2.1.4.

A number of researchers (Hargreaves, 2004; James, et al., 2004; Maharey, 2006) have reported that AFL is a key approach for personalising learning as it enables the use of evidence and dialogue to identify strengths and weaknesses of every student. The findings in this project reflect this viewpoint. Bergen et al. (2012) also found that LMSs are helping teachers develop opportunities for student assessment with quizzes and online forums being used to gather data on students. This appeared to be the case for the three teachers involved in this project who were utilising alternative forms of assessment within the KnowledgeNET.

Once teachers had identified the needs of the students using a variety of formal and informal assessments, they communicated these needs to students and caregivers via KnowledgeNET.

5.2.1.2. Communicating student needs

Each of the teachers communicated student needs as student goals and success criteria, posting these goals into KnowledgeNET. This approach corresponds with the views of other researchers (Besley & Sokoloff, 2004; DfES, 2008) who believe that personalising learning relies on students knowing their learning goals and what to do to get there.

Negotiating goals with students and involving them in the process is seen to be important by some researchers (Leadbeater, 2004b; Rudduck, et al., 2006; West-

Burnham, 2010). This was not evident in the findings of this study. However, comments and actions by Chris and Yvonne indicated that they valued the student's role in the process and were beginning to add this into their classroom practice. As a step towards this process, Yvonne and Chris required their students to enter their goals themselves. In contrast, Lucie entered the goals for her students and had them review them as part of the learning process. This suggests that Lucie was yet to make the connection between of the importance of students being involved in the process of learning as a specific feature of personalising learning as suggested in the literature. Regardless of this, Chris and Lucie questioned the skill-set that students had in being able to set their goals at a young age. This view of the students' skills is connected to more general concerns about student readiness for independent learning and is discussed in Section 5.3.4. The findings suggest differences between teachers in how they use aspects of KnowledgeNET.

Once student needs had been identified and communicated, they were used to provide the foundation of learning experiences in the classroom and in KnowledgeNET.

5.2.1.3. *Differentiated instruction to meet student needs*

All participant teachers grouped students according to their identified needs and designed learning experiences to meet these needs. The teachers managed this through small-group sessions and by designing learning activities in KnowledgeNET that linked into their learning. This was done primarily through the use of learning links. Chris did this extensively, across literacy and numeracy. Lucie was more intermittent in her use of learning links and Yvonne's learning links page was the same for the three observation periods. The use of KnowledgeNET as a tool to support student learning is detailed in Section 5.2.3.2. The degree to which KnowledgeNET reflected the learning needs of the students was not within the scope of this project. In addition, the teachers ensured that they spent some time each session checking in with individual students.

Making the learning fit the learner – not the learner fit the learning (Wilmot, 2006) is essential to personalising learning. Hargreaves (2004) and West-Burnham (2010) reported that using knowledge about what a student needs to learn, 'feeds-forward' to help the student learn more productively. It also contributes to the process of student learning by adjusting teaching and planning for learning progression, as opposed to 'getting through topics'. This corresponds with research evidence which suggests that effective grouping is carefully planned, with flexible and in-class groupings as the best way to ensure effective learning (DfES, 2008). This appeared to be the case for the three teachers involved in this project who were utilising differentiated instruction to meet student needs both in the classroom and in KnowledgeNET.

As part of the cycle of teaching and learning, the teachers continually monitored student progress and gained insight into the learning process. They modified learning experiences to meet the changing needs of students.

5.2.1.4.   *On-going monitoring to inform planning*

While addressing student needs via their goals was perceived as important, the teachers in the current study also monitored student learning, modifying their classroom programme to reflect what they had learned about student needs. KnowledgeNET tools were used to assist teachers in gaining insight into what was happening for the students and included learning journals (Chris, Lucie and Yvonne), learning reflections (Chris, Lucie and Yvonne) and learning links questions (Chris). The extent and the way that each tool was used varied between teachers.

This approach corresponds with August et al. (2007) and the DfES (2008) who found that any strategy for personalising learning must focus on improving the consistency of high quality teaching to meet student needs as effectively as possible, building on a student's prior learning and supporting them with their learning. One way of doing this was through regular monitoring and using information to plan next steps (August, et al., 2007; West-Burnham, 2010).

Teachers also used feedback and feed-forward as a strategy to monitor student learning and involve students in the learning process.

5.2.1.5. *Effective feedback and feed-forward*

All teachers spoke of the importance of effective feedback and feed-forward to support personalising learning. They spoke of the additional opportunities afforded by KnowledgeNET as a means of providing students with effective feedback and feed-forward from teachers, peers and caregivers. Yvonne spoke in detail about the importance of it in the classroom as a way to enhance student learning, enabling them to get additional perspectives on their learning. This finding is supported by Bergen et al. (2012) and Benson (2012) who reported that an LMS opens up new ways of interaction through the use of feedback and feed-forward, enabling students to know where they are at, what their next learning steps are to be and how to get there.

The wider literature provides evidence that clear feedback to students is vital to personalising learning (DfES, 2004; Rudduck, et al., 2006). The frequency with which the teacher provided feedback to students in the classroom was not closely monitored during the observations as it was not the focus of the project. However, it was evident in some of the discussions the teachers had with students around their learning and in the interviews with teachers.

Nevertheless, a conflict was evident between what the teachers valued and spoke about in the interviews and the reality of what was evident in KnowledgeNET at the time of the observations. Across the observation periods, feedback and feed-forward were evident in six responses to student entries by Yvonne. Lucie responded once and Chris responded twice. This indicated that it was rarely used throughout the process. Students were also afforded the ability to feedback to other students, yet this was not common in practice. In Yvonne's class one student had commented on another student's work during the observation periods and Chris and Lucie had three instances of student's commenting on other students' work. Insights into why this was the case were not specifically

addressed in the research. However, time constraints and issues with the KnowledgeNET program, described in Section 5.3, could have contributed to this situation.

While teachers valued feedback and feed-forward, it was spasmodic in practice. Another part of this process involved students reflecting on their learning and this was more consistent in practice.

5.2.1.6. *Students reflecting on learning*

Yvonne and Chris encouraged students to reflect on their learning throughout the learning process. All of the teachers ensured that students reflected on their goals at the end of the learning process. Ongoing reflection occurred as part of the small group sessions for Chris and Yvonne and was also replicated in KnowledgeNET. Each of the teachers modelled some aspect of goal reflection before it was transferred to KnowledgeNET by the students. For Lucie, however, this lesson was focused on the outcome of the lesson, creating a video, rather than on the process of reflection. This observation was in direct contrast to what Lucie said in her interview where she saw AFL as embedded in her practice, highlighting inconsistencies between theory and practice. This brought into question the level of 'buy in' to either AFL principles, the use of KnowledgeNET to support learning or teacher knowledge and understanding about AFL and personalising learning.

The way that students reflected on the goals varied between the classes but at a minimum included some evidence of learning in the form of videos, PDF scans or photos. In addition, each of the teachers responded to student goals, responding to over half of the learning goals in reading, writing and maths at the end of Term 2. Johannesen (2013) found that for the most part, the use of an LMS supports formative assessment methods, particularly as a digital portfolio assisting the process of self-assessment and self-regulation. This was evident in this investigation.

Providing opportunities for reflection also enabled student voice to be heard. Teachers in this study provided opportunities in the classroom and in KnowledgeNET for students to express their opinions about, and share, their learning. Similarly, Rudduck et al. (2006) and Keamy et al. (2007) reported that listening to student voice, enables students to feel valued and empowered – an important feature of personalising learning.

Yvonne and Chris transferred this strategy into KnowledgeNET, using learning reflections regularly as an effective tool for gaining insight into student thinking. Lucie used learning reflections once to gain insight into student thoughts during art week. This highlighted the differences between teachers in the regularity with which aspects of KnowledgeNET were applied throughout the term.

These findings align with a wide body of international research which suggests that AFL principles play a key role in personalising learning for students. KnowledgeNET was used as a tool to support this process. However, there were some variations evident between what was said in the interviews, observations of classroom practices and evidence in KnowledgeNET structure. This was especially apparent in the minimal presence of feedback and feed-forward for each class and the approach towards reflections by Lucie. This discussion also highlights the differences in application between teachers using aspects of KnowledgeNET and the regularity and the extent with which it is utilised.

The next section highlights the role of curriculum entitlement and choice as an approach that participant teachers utilised to personalise learning for students.

5.2.2. <u>Valuing curriculum entitlement and choice</u>

The current study found that teachers had some clear ideas about the role that student choice, independence and a varied curriculum played in personalising learning for students.

5.2.2.1.   Student Choice

The findings from the project highlighted how each teacher viewed student choice as a way of personalising learning for students. To these teachers, student choice was seen as a choice between activities led by, setup by or initiated by the teacher. Chris used a learning contract where students chose when they would complete set activities. Lucie used the 'Inference Wall' where students chose from set activities during their allocated 'Inference Wall' time and Yvonne enabled students to choose from a set list of literacy activities.   Within KnowledgeNET, students were able to choose between teacher selected activities or resources. These approaches do not reflect the definition of student choice in a personalising learning context, that is, for personalising learning to be truly personal the student should control the learning process or, at the very least, play an active part (Project Tomorrow, 2012a; West-Burnham, 2010; Wilmot, 2006). Bray and McClaskey (2013) would argue that the participant teachers are differentiating learning as opposed to personalising learning, in that the teacher "provides instruction to groups of learners" (p. 13) and "adapts instruction and chooses technology to support groups of learners" (p. 14).

However, viewing student choice as being a choice between pre-established activities is not uncommon. Previous research has found that allowing content choice was the most frequent way of personalising the learning experience both in the classroom (Underwood, et al., 2007) and in an LMS (C. Robinson & Sebba, 2010). Allowing a choice of content within the lesson should be seen as a first and not a final step in the personalisation of learning (Underwood, et al., 2007).

The discussion in this section indicates that while the way that teachers are approaching the concept of student choice is not uncommon, it is also not seen as personalising learning for students by some researchers (DfES, 2004; Leadbeater, 2004b; C. Robinson & Sebba, 2010; Underwood, et al., 2007; West-Burnham, 2010). This highlights the confusion that exists around personalising learning and what it looks like in practice.

Students having access to a varied curriculum was another component of personalising learning the teachers believed to be important.

5.2.2.2.   *Varied Curriculum*

While Lucie and Chris spoke about their perceptions around the importance of personalising learning to ensure that students are exposed to a broad curriculum, they felt that at their school there was a heavy focus on reading, writing and maths which resulted in a narrowed curriculum for students. This was highlighted by Lucie who felt that focusing on literacy and numeracy was due to school pressure to lift achievement in these areas as a result of National Standards[34]. Hattie (2009) stated that one possible effect of introduction of National Standards was that they make literacy and numeracy a priority which leads to narrowing of the curriculum. Researchers (Besley & Sokoloff, 2004; DfES, 2008; Leadbeater, 2004b; West-Burnham, 2010) support Lucie and Chris in their beliefs, advocating for greater curriculum choice as important to personalising learning.

This section shows that while the teachers valued curriculum entitlement and choice as a step towards personalising learning, the way that these were enacted in the classroom and in KnowledgeNET were not aligned with researchers' views from a personalising learning perspective (Besley & Sokoloff, 2004; DfES, 2008; Leadbeater, 2004b; West-Burnham, 2010) on how this should look from personalising learning perspective. Other research (Green, et al., 2005; McLoughlin & Lee, 2008; Underwood, et al., 2007) indicates that this is a common tension for many teachers.

The next section reveals some of the specific teaching and learning strategies which the teachers undertook when personalising learning for students.

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[34] National Standards came into effect in English-medium schools with pupils in Years 1 to 8 in 2010. The standards set clear expectations that students need to meet in reading, writing, and mathematics in the first eight years at school.

5.2.3. Utilising teaching and learning strategies

The findings emphasised some specific teaching and learning strategies which the teachers undertook to personalise learning for students. Specifically, the teachers acted as facilitators for learning, using KnowledgeNET as a tool for learning and to open new pathways of learning.

5.2.3.1. Facilitators of learning

The teachers in the project worked with students as facilitators of learning in the classroom – leading discussions, asking open-ended questions, linking new learning with prior learning, guiding students, modelling the learning process and enabling active participation of the learners. While teachers as facilitators is seen by researchers as having an essential role in personalising learning, it is how this plays out for students in developing their ability 'to learn how to learn' that is the key (Hargreaves, 2004).

Previous research emphasises how the teacher's role should be about supporting students in making the best possible learning choices (Leadbeater, 2004b) by ensuring students understand the process of learning, how knowledge is created and their role in creating it (Maharey, 2006). For the teachers involved in the project, this final step was not evident. While the strategies the teachers utilised were seen as effective practice, learning was managed by the teachers addressing learning needs in literacy and numeracy, however developing the skills needed to be lifelong learners was not well-established. The learning observed was about filling learning gaps. On the one hand, teachers were personalising learning by structuring the learning around identified needs; on the other hand personalising learning was lessened as teachers were not enabling students to be self-directed learners.

Teachers viewed their role in a personalising learning environment as being a facilitator of learning, the impact of which was diminished, as the teachers were not empowering students with the skills and attitudes needed to be self-directed

learners. The teachers felt their role involved utilising KnowledgeNET as a tool for learning.

5.2.3.2. *KnowledgeNET as a tool*

KnowledgeNET was seen by the teachers as a tool for learning. The way KnowledgeNET was used depended on how it was set up by the teacher which was generally aligned with the pedagogy that was being used in the classroom. As noted in Section 5.2.1, AFL was the scaffold around which classroom learning and KnowledgeNET was designed. For instance, all of the teachers used learning intentions in their classroom guided sessions and also used learning intentions on their learning links pages in KnowledgeNET. The teachers set goals for students based on learning needs and these were uploaded into KnowledgeNET which was also used to store evidence of learning towards the goal. Section 5.2.1 also highlighted the differences between teachers in the extent and regularity with which aspects of KnowledgeNET were utilised. How closely classroom practice and KnowledgeNET design were aligned and why the teachers had done so was not investigated within the parameters of this project as this was outside the scope of this research.

Using an LMS to support classroom pedagogy corresponds with the findings of some researchers (McLoughlin & Lee, 2008; Underwood, et al., 2007) who found that the way that teachers used an LMS replicated classroom practice. They noted that if the classroom was personalised, chances were that the way that the LMS was used was more personalised. This is not the finding of all research. Some research found that an LMS supported traditional modes of teaching (Aslan, et al., 2011; Bergen, et al., 2012; European SchoolNet, 2003) while other research (Bergen, et al., 2012; Johannesen, 2013; Snodin, 2013) discovered that an LMS can open up new ways of teaching and learning.

Teachers used KnowledgeNET as a tool built around AFL principles, many of which were also evident in the classroom programme. They also used

KnowledgeNET to enable students to access a variety of resources to support their learning.

5.2.3.3. *KnowledgeNET opening learning pathways*

Each of the teachers recognised that KnowledgeNET provided students with alternative ways to learn through the provision of a variety of online resources. These resources included websites, quizzes, video games and pictures to support learning which were generally linked to students' learning needs in some way. Chris utilised these aspects regularly whereas Lucie and Yvonne used them intermittently. Crook et al. (2010) and Underwood (2007) reported that providing a range of media, enables a variety of learning opportunities for students which enhanced motivation.

In this section, specific teaching and learning strategies, which the participant teachers undertook to personalise learning, are documented. They saw themselves as facilitators of learning, using KnowledgeNET as a tool to scaffold learning around AFL principles, many of which were also evident in classroom practice. Participant teachers designed KnowledgeNET in such a way as to open new pathways of learning linked to the learning needs of the students. These findings showed that the way KnowledgeNET was used reflected the pedagogical beliefs that the teachers held. This section emphasises the ongoing tension for the teachers around the depth to which they were personalising learning in light of the findings from other research (Leadbeater, 2004b; Maharey, 2006) around personalising learning and in enabling the students to control their learning.

The next section highlights the importance teachers placed on strong relationships between home and school and role of KnowledgeNET in enhancing the relationship.

5.2.4. Acknowledging the importance of strong relationships

Each of the teachers saw KnowledgeNET as a tool which enabled parents to become part of the learning process. Previous research has reported that an LMS

enables parents to monitor their child's progress more easily and parents are more likely to be engaged in the school community (BECTA, 2004; Maharey, 2006). Observing the presence of parent comments was not within the parameters of this research project.

Research has found that an LMS can be an ideal way to open the classroom to parents. Benson (2012) reported that parents who were using an LMS found that it provided them with opportunity to reflect and discuss their child's learning with them. However, the parents in Benson's study still favoured face-to-face processes and had mixed feelings about the on-line form of reporting. Lucie and Yvonne felt that the high number of ESOL parents at the school minimised the usefulness of KnowledgeNET. Yvonne implemented a number for strategies to encourage parents into KnowledgeNET but felt that the parents were unsure about their role.

This section emphasised the tension for teachers between what they valued i.e., KnowledgeNET as a tool which enabled parents to become part of classroom learning process, and what was happening in practice, that is, limited access by parents. The reasons behind the tension were not investigated within the parameters of this project as it was outside the scope of this research.

This section has presented the teaching and learning approaches the participant teachers used to personalise learning for their students, both within the classroom and within the KnowledgeNET. The discussion has highlighted the ongoing tension for teachers between successful personalising learning, as defined by researchers, and the actuality of classroom practice. While the teachers were utilising AFL principles in the classroom and KnowledgeNET to personalise learning for students, the depth to which these approaches were successful in developing the capacity of students to learn independently is unclear.

The next section discusses a key theme that also emerged from the findings. This theme encompassed factors that were found to challenge the participant teacher's ability to personalise learning for students.

5.3. Factors that influence the teacher's ability to personalise learning for students

There were seven factors that were found to challenge the participant teachers' abilities to personalise learning for students: (a) teacher knowledge about personalising learning, (b) conflicting definitions of personalising learning, (c) curriculum constraints, (d) independence of students, (e) time factors, (f) limitations of the KnowledgeNET program and (g) parental involvement.

5.3.1. Teacher knowledge about personalising learning

Lucie, Chris and Yvonne acknowledged that they were each on a learning journey when it came to personalising learning in their classrooms, noting that they were changing practice to reflect new learning, understandings and skills. Similarly, An and Reigheluth (2011) noted the importance for teachers to have an understanding about personalising learning and ways to use technology in order to create technology-enhanced, learner-centred classrooms. Lack of knowledge on personalising learning was seen as a barrier by teachers in this research project. One possible contribution to this uncertainly could be explained by the conflicting definitions of personalising learning which exist.

5.3.2. A variety of definitions for personalising learning

The teachers expressed their uncertainty about personalising learning and what it looked like in practice as a result of the various definitions of personalising learning. The earlier discussion in Section 5.2.3.1, highlighted the ongoing tension for teachers between successfully personalising learning for students, as defined by researchers, and the actuality of classroom practice. This was especially evident when discussing student choice and the role of students in the personalising learning process. This tension reflects the findings of some

researchers (Bray & McClaskey, 2013; Underwood, et al., 2007) in that the variety of definitions for personalising learning were confusing for teachers, as there was no clear and consistent interpretation of the term or what this looked like in action, both in the classroom and in the LMS. If personalising learning is to become a cornerstone of future-orientated learning and teaching, clarity around this definition and the components of it is required.

5.3.3. Curriculum constraints

Lucie and Chris articulated the tension between school requirements and personalising learning earlier in Section 5.2.2.2. They are not alone in this observation. Green et al. (2005) and McLoughlin and Lee (2008) note that, at times, institutional contexts, the prescribed nature of education and pre-defined syllabi and assessment, act not as a driving force for personalising learning, but deny each student the choice and autonomy to shape their own learning. McLoughlin and Lee (2008) and Underwood et al. (2007) discovered that many teachers were extremely cautious about providing opportunities for learners that departed from the National Curriculum and associated assessments. The comments by Lucie and Chris indicated that they felt a similar tension in deviating away from the focus on literacy and numeracy. It also highlights the inconsistencies inherent in encouraging a personalising learning agenda for students, as part of future-orientated learning and teaching, and the expectations placed on teachers by the school, the New Zealand Curriculum and National Standards.

5.3.4. Independence

All the participant teachers expressed the concern that not all students had the skills required to work independently and make the most of the learning opportunities provided for them. This concern corresponds with previous research (Bray & McClaskey, 2013; Hargreaves, 2004; Snodin, 2013) which found the capacity to learn independently and to manage oneself was crucial to personalising learning in the classroom and within an online environment

(Bolstad & Lin, 2009). These skills do not come naturally to all students, Snodin (2013) notes, and need to be learnt, requiring scaffolding and intervention.

5.3.5. Time factors

The participant teachers identified time constraints as a factor which affects their capacity to personalise learning for students. Time constraints affected classroom practice for each of the teachers as they felt there were not enough hours in the school day to do everything they wanted to do. The focus on literacy and numeracy also meant that other curriculum areas were compromised. Bolstad and Lin (2009) acknowledged that personalising learning for students and all that this involves, can seem more unmanageable than a one-size-fits-all model, especially in a system that is not necessarily designed to achieve this.

Within KnowledgeNET, Lucie and Chris found it difficult to find the time to provide prompt feedback to students and design learning tasks with appropriate resources. This finding is aligned with previous research which identifies time as a barrier to the use of an LMS in the classroom (An & Reigeluth, 2011; Bergen, et al., 2012; Underwood, et al., 2007). Specifically, Underwood et al. noted (2007) that LMSs are "technologically and pedagogically high-maintenance developments" (p. 8). Bergen et al. (2012) recommends that teachers need more support in "negotiating ways to provide online learning experiences for students while maintaining their own work-life balance" (p. 41).

5.3.6. Limitations within KnowledgeNET

Chris and Yvonne described the limitations of using KnowledgeNET citing difficulty uploading videos and evidence (Chris), incompatibility with ipads (Chris) and issues with saving work (Yvonne). Previous research linked to LMS use in schools has highlighted technology issues as a barrier for many teachers when using an LMS in their classroom (Bergen, et al., 2012).

5.3.7. Lack of parental involvement

Each of the teachers commented on the lack of parental involvement in KnowledgeNET and the difficulty they were experiencing in engaging parents, as described in Section 5.2.4. This finding was not supported by wider research around LMS use.

This section examined the factors found to challenge the participant teachers' abilities to personalise learning for students. Emphasis was placed on the uncertainty that surrounds the concept of personalising learning by the teachers, how this looks in practice and the restrictions that these challenges place on teachers.

5.4. Summary

The findings of this research project suggest that teachers make choices in how they structure the learning environment to personalise learning for their students in the classroom and in KnowledgeNET. This is consistent with other research findings (Aslan, et al., 2011; European SchoolNet, 2003; Ofsted, 2009). There were significant commonalities between the participant teachers, with the findings showing that for these teachers personalising learning involved: (a) learning built around assessment for learning pedagogy, (b) a highly-structured approach to learning and teaching that places student needs at the centre of learning, (c) learners informed and empowered through student voice and choice, (d) a core curriculum of literacy and maths and (e) KnowledgeNET as a tool to support learning.

The discussion highlighted the ongoing tension for teachers between successfully personalising learning, as defined by researchers, and the actuality of classroom practice. While teachers were utilising AFL principles in the classroom and KnowledgeNET to personalise learning for students, the depth to which these approaches were successful in developing the capacity of students to learn independently is unclear. A mismatch between the values espoused by the teachers and their practice was evident. The role of effective feedback, a varied

curriculum and parental involvement were highlighted as important to personalising learning, yet these were either not evident in practice or were limited in practice. The findings raise questions around how the challenges described limit the extent to which classroom practice and KnowledgeNET use reflect the literature of personalising learning.

The next chapter presents the conclusion for this thesis. The chapter reiterates the major findings, discusses the implications of the study and identifies limitations encountered during the research project.

Chapter 6 - Conclusion

This chapter draws the thesis to a close by reconfirming the major findings and discussing the implications of the study for teachers' practice and future research. The limitations which emerged during the project are outlined and the final thoughts of the researcher are revealed.

This research project set out to explore the use of a Learning Management System in a primary school and its role in personalising learning for students. However, it turned into exploring components of personalising learning and how this transferred into the LMS. A better understanding of personalising learning and how this was reflected in the LMS was attained, enabling the answering of the research questions. Simultaneously, the research was a catalyst for further questions and possibilities for future research.

6.1. Summary

This section outlines the key findings as they relate to the research questions. Thereafter, the additional insights that were identified are described.

The key finding which resulted from this research was that an LMS has the potential to be a key aspect of a classroom environment which is built on the components of personalising learning. The degree to which this is teacher-facilitated learning versus student-directed learning is dependent on the teacher – both in the classroom and within the LMS. How this looked in literacy and numeracy for the three participant teachers was evident in the findings.

6.2. What does personalising learning look like in a primary classroom with a Learning Management System as a core component?

Personalising learning was evident in the classrooms of the teacher participants where this was perceived as being "high expectations of every child, given practical form by high quality teaching based on a sound knowledge and understanding of each child's needs" (Milibrand, 2004, p. 8). Personalising

learning involved: (a) learning built around assessment for learning pedagogy, (b) a highly-structured approach to learning and teaching that places the needs of students at the centre of learning, (c) learners informed and empowered through student voice and choice, (d) a core curriculum of literacy and maths and (e) KnowledgeNET as a tool to support learning.

A 'typical' classroom was designed on AFL pedagogy with a heavy focus on literacy and maths. This involved the teacher using assessment and evidence to identify gaps in student learning from which goals were developed. The success criteria for these goals, the 'I cans', informed the teaching and learning that occurred in the classroom. Students were generally taught in small groups and provided with choice, in some form, as to the learning activities they wished to engage in. How this looked in practice varied between the classrooms. The teachers viewed themselves as facilitators of learning, encouraging students to be active participants. The students reflected on their learning, most commonly at the end of the term, when they reviewed their progress towards their goal. The use of KnowledgeNET was integrated into the teaching and learning that occurred throughout the day. The frequency with which KnowledgeNET was used varied between the classrooms.

6.3. How are the teachers using a Learning Management System to personalise learning?

KnowledgeNET was seen by the teachers as tool for learning and the way that it was used generally aligned with the pedagogy that was being used in the classroom. As AFL was the scaffold around which classroom learning was designed, it was also the scaffold around which KnowledgeNET was designed. The student goals in literacy and maths were evident in each student's area in KnowledgeNET. Evidence of learning was uploaded to KnowledgeNET and students and teachers commented on goal progress. Learning links pages were designed for each group and included a range of online resources focused around each group's learning needs. These included websites, quizzes, video games and pictures to support learning. How this looked in practice varied slightly between

the different teachers. Learning reflections were used by teachers to ask students questions about their learning, to which students posted comments. Learning journals were used by some students as a place to show their learning and get feedback and feed-forward. Evidence gained from KnowledgeNET was used to give teacher's insight into student learning and they modified classroom planning as needed.

Ultimately, KnowledgeNET was used as a tool to address the learning needs of students, and in doing so, supported personalising learning for students.

6.4. Additional insights

While it was evident that the teachers in the project were personalising learning in some ways within KnowledgeNET, they were doing this by replicating current ways of teaching and learning without utilising KnowledgeNET to open up new possibilities. This is contrary to some of the research which indicates that an LMS can be used as a catalyst for change (Keamy, et al., 2007; Leadbeater, 2005).

The participant teachers found the variety of definitions for personalising learning confusing, finding that there was no clear and consistent interpretation of the term or what this looked like in action. This meant that teachers were often changing practice in light of new learning to such a degree that one teacher was unsure if she was headed in the right direction.

There are inconsistencies inherent in encouraging a personalising learning agenda for students, as part of future-orientated learning and teaching, and the expectations placed on teachers by the school, the New Zealand Curriculum and National Standards. This caused tension for two of the teachers.

Teachers faced a number of challenges when personalising learning either in their classroom and/or within KnowledgeNET. In addition to those mentioned above, teachers also described: (a) time factors, (b) limitations of the KnowledgeNET program, (c) negligible parent involvement and (d) limited independence of students.

The findings of this research project suggest that teachers make choices in how they structure the learning environment to personalise learning for their students, in the classroom and in KnowledgeNET, which are aligned with the teacher's beliefs about personalising learning. In doing so, teachers face a number of challenges when personalising learning.

The findings of this research project make a small contribution to available research on personalising learning and LMSs.

6.5. Significance of the research

This research project has added to a small body of research on personalising learning and the use of an LMS in a primary school. The research builds on previous research on personalising learning to create a description of what personalising learning could be and how this transfers into the classroom and into the LMS within the classroom. This research gives readers an insight into what personalising learning looks like for the three participant teachers and the common components which emerged from the findings. Specifically, the research contributes to these understandings within a New Zealand primary education context, of which there is currently extremely limited research. This research shows that, like any learning tool, an LMS in a primary school can be built around the key components of personalising learning.

The research highlights some of the challenges that teachers are facing in the classroom when personalising learning for students and in using an LMS as part of the process. The project only touched the surface of the issues surrounding personalising learning and LMS use, illustrating the need for further research in this area. As such, the research holds implications for practice and future research.

6.6. Implications for practice

As a small scale qualitative project, this research does not make summative statements about best practice of personalising learning. However, the findings

can hold implications for the key stakeholders – the research school, KnowledgeNET (the LMS provider) and the Ministry of Education.

As the research school has identified that personalising learning is important to the school vision, the project findings could be used to give this vision some traction. The findings may motivate the development of a school-wide definition of personalising learning and the associated components. Such a definition could promote clarity and support a common language for learning conversations between teachers. It would also enable teachers to confidently critique and reflect on their current understandings and practice. The project findings could be utilised by the school as a catalyst for a review of current curriculum expectations and the associated consequences for learning in light of the findings around the perceived narrowing of the curriculum. The school could review the challenges that have emerged from this project and take actions, where possible, to minimise these challenges.

This research will hopefully provide KnowledgeNET, the LMS provider, with a case study so that they understand the role that the LMS plays within three primary school classrooms.

If personalising learning is be promoted as a key aspect of future-oriented learning, as highlighted in the literature review, a concise definition of personalising learning and the corresponding components would enable schools to have a clearer vision about what this looks like and support them in bringing it to fruition in their schools.

While the results from this research project hold implications for teaching practice, the findings also have some implications for future research.

6.7. Implications for Research

Personalising learning has the potential to transform education and is being promoted as an essential component of future-oriented teaching and learning. However, very little research is available, especially from a New Zealand

perspective and/or a primary school perspective, which investigates what personalising learning looks like in practice. While this project provides some insight into possible ways that an LMS can be used to support personalising learning practice in literacy and numeracy, there is still much research that could be undertaken to investigate common components on a greater scale and the other issues that were highlighted in this research project.

Questions emerged around the lack of consistent definitions of personalising learning and its associated components, the possible use of the LMS outside of numeracy and literacy, the conflicting agendas of personalising learning and National Standards expectations, obstacles to the active involvement of parents in student learning via the LMS and the expectation that an LMS can be used as a catalyst for change, versus replicating current practice. Further research into any of these issues would provide schools and teachers with support in how to make personalising learning a reality for the students in our schools.

6.8. Limitations of the project

Chapter Three highlighted the methodology limitations which were identified prior to the commencement of research. These limitations were: role of the researcher, presence of the researcher in the setting and KnowledgeNET accessibility. Outside of these limitations, a number of additional limitations arose during the study. These are listed and explained in this section.

6.8.1. Small sample size

This study was carried out at one site, with three teachers, at one point in time and as such does not claim to include the thoughts and actions of all of the teachers at the school. The small sample size limits the extent to which these findings can be transferred to another setting.

The project was further bounded by the place and time in which the research took place. The research took place over a 10 week period (excluding school holidays).

Had the data been collected at another time or for a longer time, alternative findings may have been revealed.

6.8.2.   Unable to focus on all components of personalising learning

Within the time constraints of this project, not all of the components of personalising learning, as drawn from research and represented in Figure 2.1, could be investigated in depth. The components of personalising learning that emerged the strongest during the data gathering phase was the basis on which the themes were built. This narrowed the focus of the study.

6.8.3.   Lack of clarity around personalising learning

The fact that there is no generally accepted definition of personalising learning, or agreed components, affected a number of elements of the project. Firstly, much of the data collection and analysis within the project relied on the researcher's interpretation of personalising learning and her understanding gathered from the literature review.   While every effort was taken to exclude bias, it is acknowledged that the researcher is not an 'expert' in personalising learning and that her insights may have been viewed differently by another researcher. The lack of clarity surrounding personalising learning made it challenging to accurately observe and analyse what this looked like in practice. Secondly, when discussing components of personalising learning with the teacher participants, disparities in understanding of terms arose making it difficult to compare one with another.   This was evident between teachers, and for the teachers themselves, as their conception of personalising learning changed over the research period.

6.8.4.   KnowledgeNET Observations

Data in KnowledgeNET was gathered during a five day timeframe which corresponded to the week that the in-class observation was undertaken. This was to ensure that the amount of data gathered was manageable for the researcher in the timeframe of the project. Consequently, some of the data gathered was part of

a more complex entry that was not used as it was outside of the specific data collection dates. It would have been more insightful to use the full entry, as this would have added to the richness of the data and enabled the 'big picture' to be seen.

6.8.5. Students

Students were not included in the project as participants other than as part of classroom observations. The irony of this is not lost on the researcher, when one considers that personalising learning is about putting the student at the centre of the learning process. One could argue that students should also be put at the centre of, or at the very least consulted with, around personalising learning and how that is working for them – within the classroom and within the LMS.

Despite the limitations of the project, a better understanding of personalising learning and how this was reflected in the LMS was attained. The research was a catalyst for further questions and possibilities for future research.

6.9. Final Thoughts

Personalising learning has much potential: the potential to meet the needs of all students, to actively engage students in their learning and to build student learning capacity so that they become independent, self- directed learners. Digital technologies, such as an LMS, have potential too: the potential to bring parents into the learning process, to hear student voice and to harness new ways of learning.

For personalising learning to meet its full potential, educators need to resolve the confusion which currently surrounds it. The gap between personalising theory and actual practice needs to be closed by clearly defining what it encompasses and by illustrating how personalising learning transfers to the classroom. The potential that digital technologies have in such an environment needs to be the subject of further research. The inconsistencies inherent in encouraging a personalising learning agenda for students, as part of future-orientated learning

and teaching, and the expectations placed on teachers by the school, the New Zealand Curriculum and National Standards needs to be addressed. Once this happens, teachers will be in a position to embrace the potential of personalising learning to make the learning fit the learner – rather than the learner fit the learning. This is when the impact for students will be at its greatest!

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Appendices

Appendix A : MUHEC Ethics Approval Letter

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA

10 May 2013

Bronwyn Edmunds

Dear Bronwyn

Re: HEC: Southern B Application – 13/20
       Using an online Learning Management System (LMS) to personalise learning for
       primary students

Thank you for your letter dated 7 May 2013.

On behalf of the Massey University Human Ethics Committee: Southern B I am pleased to
advise you that the ethics of your application are now approved. Approval is for three years.   If
this project has not been completed within three years from the date of this letter, reapproval
must be requested.

If the nature, content, location, procedures or personnel of your approved application change,
please advise the Secretary of the Committee.

Yours sincerely

Dr Nathan Matthews, Chair
Massey University Human Ethics Committee: Southern B

cc   Dr Maggie Hartnett   Dr Kama Weir
     Institute of Education   Institute of Education
     PN500   **PN500**

     Mrs Roseanne MacGillivray   Prof Sally Hansen, Interim Director
     Institute of Education   Institute of Education
     PN500   **PN500**

Appendix B : Email – Access Request for Board of Trustees

Dear _____,

I am currently on study leave from Sunshine School to complete my Masters in Education, a key component of which is to complete a thesis. I have chosen to explore the way that a Learning Management System can be used to personalise learning for students. I am writing to you to request permission to conduct the research at Sunshine School. Participation in the project is voluntary for the school, the teachers, and the students within the school. Both the school and participants are at liberty to withdraw from the project at any time.

Sunshine School was chosen as a potential research site as it meets the key criteria for inclusion:

- A Primary School
- New Zealand Curriculum informs teaching and learning
- Uses a Learning Management System to support learning
- Is acknowledged as an effective user of a Learning Management System to support learning with a number of national and international schools visiting throughout the year.
- Is one of the 3 KnowledgeNET Navigator Schools in New Zealand.

Enclosed with this letter, you will find:

- An *Access Request for the Board of Trustees - Information Sheet* which describes the project, outlines the procedures to be used, discusses the potential benefits of participating in the research project, and addresses how potential risks will be minimised.
- A *School Access Consent Form* to be completed and signed by you and the Principal – should you choose to allow the research to be conducted at Sunshine School.

If you have any further questions you are welcome to contact myself or the supervisors as listed at the bottom of the information sheet. Should you and the Board to Trustees consent to the research being conducted at the school, I would then invite teachers to participate in the research.

I look forward to your response.

Kind regards

Bronwyn Edmunds

Appendix C : Access Request for Board of Trustees – Information Sheet

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

Project Title: Using an online Learning Management System (LMS) to personalise learning for primary school students.

Researcher:

My name is Bronwyn Edmunds and I am the e-learning and curriculum Lead Teacher at Sunshine School. This year I am on study leave and I am working on a thesis as part of my Master degree at Massey University. The thesis will explore the use of a Learning Management System (LMS), such as KnowledgeNET, to personalise learning for students in a primary school. Dr Maggie Hartnett and Dr Kama Weir, both experienced researchers themselves, will be supervising me throughout the research project.

I am writing to invite Sunshine School to give me permission to conduct the research at your school.

Project Description:

The research project will focus on 3 teachers who are using KnowledgeNET to support the learning of their students. Data collection will begin at the beginning of Term 2 (13/05/2013) and run until the end of Term 2 (26/07/2013). KnowledgeNET is one type of learning management system endorsed by the Ministry of Education and used by many schools in New Zealand, including Sunshine School. A Learning Management System (LMS) is loosely defined as a secure online space of software tools and digital online content used to support learning and assessment.

Aims of the Research Project:

The project aims to examine and describe how primary teachers are utilising a KnowledgeNET to facilitate personalised learning, identifying some common features for effective use of the LMS, linking personalised learning theory and practice. The key idea is to explore how KnowledgeNET is being used; it is not about judging quality of practice.

Participant Identification and Recruitment:

Recruitment method:

The researcher will email all teachers and invite them to participate in the research project. The email will outline the criteria that the researcher is looking for in potential participants. Teachers who are interested in participating in the project can register their interest with the researcher via return email. Potential participants will be informed of their inclusion in the research project and given the *Teacher Consent Form* to complete. Potential participants who are not selected will be advised by email with an explanation as to the reasoning behind this.

Participant Criteria:

- Classroom teacher
- Uses a KnowledgeNET as part of teaching and learning programme
- One participant from each year grouping
- Lead teacher within the school – on the ICT/ e-learning team; facilitator of the e-learning inquiry quality learning circles.
- Presentation at Conferences such as KnowledgeNET, Ulearn and Smartboard Conference

Number of participants to be involved and the reason for this number:

The intended participants are 3 teachers. The teachers will be invited to be participants in the project via an email sent from the Executive Officer. This ensures that teachers will feel free to participate in the project minimising the possibility of coercion by the researcher.

The students in the classes of these teachers will also be participants in the research project as their work within the KnowledgeNET and the way the teacher sets the students up for working in KnowledgeNET the classroom will also inform the research project. To ensure that full consent is received, the researcher will require parents to sign a *Student Participant Consent Form –Parents Permission* on behalf of the students if they wish them to participate in the project. Students who are not taking part in the project will not be included in any of the data gathered by the researcher. The researcher will request that the teacher ensures that these students are working in another classroom on set schoolwork at the time of the observations.

The main reason for selecting 3 teachers, 1 teacher from each of the year level, is that this enables a cross-section of schooling levels to be included in the research project ie. Year NE-Year 2 teacher, Year 3-4 teacher and a Year 5 and 6 teacher.

Potential benefits to the school and participants as a result of participation:

- It is envisaged that the findings from this project will enable a clearer picture to emerge for teachers about what personalizing learning looks when using an LMS like KnowledgeNET.
- Collaborating with teachers on the findings of the research could be used to develop a school wide programme for personalised learning.
- The benefits for student participants are that their learning would become more personalised which in turn may improve student engagement and learning capacity as lifelong learners.

Potential discomforts or risks to the school as a result of participation:

- Teachers who apply to participate in the research project, and are not chosen, may feel that they or their teaching practice is not of a high standard. Although this is a possibility, ensuring the teachers know the criteria for selection and that it is applied consistently should minimise this risk.
- The school may see the study as an evaluation of their ICT and e-learning practice which may impact the schools status as a lead school in this area. The teachers involved could also view the research project as an evaluation of their teaching practice which could make them uncomfortable. This could be increased by the fact

that the researcher is in the leadership team and is responsible for e-learning and curriculum within the school. Although this is a possibility, the school ethos of 'Teaching as Inquiry', open-to-learning conversations and professional learning, would indicate that this would be viewed as an opportunity for growth and development by the school and teachers.

- The teachers and the school could also be worried that individual comments and practice might become known outside of the parameters of the research project. This will be addressed by assigning a code or alias, known only to the researcher, to participants. They will only be referred to by this code or alias in any conversations or publications.
- There is potential for intrusion and disruption of normal routines and additional stress resulting from research carried out during busy times in the term. The researcher would consult with teachers in establishing a timetable for interviews and observations that ensures minimal disruption to routine and that these occur at suitable times in the school term.
- No potential harm is envisaged for the students in the classes as they will continue to work as normal in their classroom and there will be minimal direct contact with the researcher. Their work within KnowledgeNET and the way the teacher sets the students up for working in the KnowledgeNET in the classroom will inform the research project.

Project Procedures:

In total, it is anticipated that teachers participants would be required to give 3 hours and 30 mins to the project over a term of the school year. These would take the form of:

- *Two Interviews* – Teachers will be interviewed individually and the interview will last for 30 minutes.
- *Three Observations* - 30 minute observations of 'normal' classroom programme – no interaction with researcher.
- *Final Debrief:* Teachers will be invited to participate in a 30 minutes conversation which is not included on the data.
- *Miscellaneous:* Teachers can choose to review interview transcripts and final summary with the researcher for up to 30 mins.

In addition the researcher would gather data from:

- *KnowledgeNET Analysis* - which involves the researcher looking at students' online work, teacher-student online conversations and reflections, and class online work to explore what is happening in KnowledgeNET and how it is being used. This will occurs concurrently with interviews and observations.

Conflict of Interest:

As the researcher is employed by Sunshine School, a potential conflict of interest exists between the role of researcher and that of teacher and leader at the school. However, this is unlikely to occur as the project is in line with the school direction and could be used by the school as a catalyst for further conversations, analysis, and investigation. Conflict resolution is a part of the school ethos and as such, there are strategies and processes in place to deal with conflicts as they occur. These are designed around 'open-to-learning' conversations and would be used if conflict arose as part of the research project.

Data Management:

Access to Learning Management System:

The researcher in their current role at the school has administrative access to KnowledgeNET which includes all areas and all information in KnowledgeNET. Within the configuration of KnowledgeNET, it is not possible to restrict access to certain users, in this case students who are not participating in the research. The researcher acknowledges that this poses an ethical dilemma. The main solution is that the researcher needs to ensure that she conducts herself in an ethical and credible manner consciously choosing to ensure that only the data of participants will be accessed and used to inform this research project.

Anonymity of identity:

The researcher will ensure that information obtained is kept confidential and reported in a way that it cannot be directly connected to the participant. However, while every step will be taken by the researcher to maintain the anonymity of the school and participants, this cannot be guaranteed by the researcher. As staff will know that the project is being conducted and as there are only a small number of participants, it may be possible to identify who is involved. In addition, as the school uses KnowledgeNET in some unique ways that have been shared with parts of the educational community, it may be possible to identify the school where the research has taken place.

Use of data:

Data collected will be analysed and used to inform the basis of the thesis for the Master of Education. All data will be stored securely. Electronic data and paper-based data will be retained for a period of five years, after which it will be shredded.

Method for accessing a summary of the project findings:

At the completion of the research, all participants will be given a summary of the main findings as is the requirement of the code of ethics. In addition, key findings and summary will be shared via participation in professional learning groups or education conferences.

School Rights:

The school is under no obligation to accept this invitation. If you decide to enable the project to be undertaken in this school, you have the right to:

- withdraw from the study by the 17th of May 2013
- ask any questions about the study at any time during participation;
- be given access to a summary of the project findings when it is concluded.

"This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern B, Application 13/20. If you have any concerns about the conduct of the research, please contact Dr Nathan Matthews, Chair, Massey University Human Ethics Committee: Southern B, telephone 06 350 5799 x 80877, email humanethicsouthb@massey.ac.nz."

Appendix D : School Access Consent Form

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

Project Title: Using an online Learning Management System (LMS) to personalise learning for primary students.

We have read the Information Sheet and have had the details of the study explained to us. Our questions have been answered to our satisfaction, and we understand that we may ask further questions at any time.

We agree/ do not agree to the researcher, Bronwyn Edmunds, conducting research at Sunshine School.

We agree/ do not agree that the researcher, Bronwyn Edmunds, may approach teachers, students, and parents to invite them to be participants in the research project.

We agree/ do not agree to the researcher, Bronwyn Edmunds, accessing KnowledgeNET, knowing that she will have access to information on all students but will only access the information relevant to those participants who have agreed to participate in the research project.

The anonymity risks have been explained to us and we understand the precautions that will be undertaken to minimise potential harm.

We agree/ do not agree to have the school named as part of the final report.

Full Name Printed: _____   Full Name Printed: _____

Signature: _____   Signature: _____

Date: _____   Date: _____

Principal of Sunshine School   Sunshine School BOT - Chairman

Appendix E : Email – Invitation to Possible Teacher Participants

*Dea*r teacher,

Bronwyn is currently on study leave to complete her Masters in Education, a key component of which is to complete a thesis. She has chosen to explore the way that a Learning Management System can be used to personalise learning for students. I am writing to you to invite you to participate in the research project. Participation in the project is voluntary and you are at liberty to withdraw from the project at anytime.

In order to ensure that teachers who are involved in the project are those from which the most can be learned, the following criteria, in order of priority are perceived criteria for potential participants:
1. Classroom teacher
2. Uses a KnowledgeNET as part of teaching and learning programme
3. One participant from each year grouping
4. Lead teacher within the school – on the ICT/ e-learning team; facilitator of the e-learning inquiry quality learning circles.
5. Presentation at Conferences such as KnowledgeNET, Ulearn and Smartboard Conference

Attached to this email you will find:
- The *Teacher Participant Information Sheet,* which describes the project, outlines the procedures to be used, discusses the potential benefits of participating in the research project, and addresses how potential risks will be minimised.

If you have any further questions you are welcome to contact Bronwyn or the supervisors as listed at the bottom of the information sheet.

If you are interested in participating in the project, please respond via email to Bronwyn – brone@freemansbay.school.nz.

The closing date for expressions of interest in participating in the research project is Thursday the 9th of May, 2013. After this date, Bronwyn will select 3 teachers to be participants in the project who will be notified by email. Teachers who are not selected to be participants will also be advised by email.

Bronwyn looks forward to hearing from you.

Kind regards,

Executive Officer

Appendix F : Teacher Participant Information Sheet

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

Project Title: Using an online Learning Management System (LMS) to personalise learning for primary school students.

Researcher:
My name is Bronwyn Edmunds and I am the e-learning and curriculum Lead Teacher at Sunshine School. This year I am on study leave and I am working on a thesis as part of my Master degree at Massey University. The thesis will explore the use of a Learning Management System (LMS), such as KnowledgeNET, to personalise learning for students in a primary school. Dr Maggie Hartnett and Dr Kama Weir, both experienced researchers themselves, will be supervising me throughout the research project.

Project Description:
The research project will focus on 3 teachers who are using KnowledgeNET to support the learning of their students. Data collection will begin at the beginning of Term 2 (13/05/2013) and run until the end of Term 2 (26/07/2013). KnowledgeNET is one type of learning management system endorsed by the Ministry of Education and used by many schools in New Zealand, including Sunshine School. A Learning Management System (LMS) is loosely defined as a secure online space of software tools and digital online content used to support learning and assessment.

Aims of the Research Project:
The project aims to examine and describe how primary teachers are utilising a KnowledgeNET to facilitate personalised learning, identifying some common features for effective use of the LMS, linking personalised learning theory and practice. The key idea is to explore how KnowledgeNET is being used; it is not about judging quality of practice.

Participant Identification and Recruitment:
Recruitment method:
The researcher will email all teachers and invite them to participate in the research project. The email will outline the criteria that the researcher is looking for in potential participants. Teachers who are interested in participating in the project can register their interest with the researcher via return email. Potential participants will be informed of their inclusion in the research project and given the *Teacher Consent Form* to complete. Potential participants who are not selected will be advised by email with an explanation as to the reasoning behind this.

Participant Criteria:
1. Classroom teacher
2. Uses a KnowledgeNET as part of teaching and learning programme
3. One participant from each year grouping
4. Lead teacher within the school – on the ICT/ e-learning team; facilitator of the e-learning inquiry quality learning circles.
5. Presentation at Conferences such as KnowledgeNET, Ulearn and Smartboard Conference

Number of participants to be involved and the reason for this number:
The intended participants are 3 teachers. The students in the classes of these teachers will also be participants in the research project as their work within the KnowledgeNET and the way the teacher sets the students up for working in KnowledgeNET the classroom will also inform the research project. To ensure that full consent is received, the researcher will require parents to sign a *Student Participant Consent Form –Parents Permission* on behalf of the students if they wish them to participate in the project. Students who are not taking part in the project will not be included in any of the data gathered by the researcher. The researcher will request that the teacher ensures that these students are working in another classroom on set schoolwork at the time of the observations.

The main reason for selecting 3 teachers, 1 teacher from each of the year level, is that this enables a cross-section of schooling levels to be included in the research project ie. Year NE-Year 2 teacher, Year 3-4 teacher and a Year 5 and 6 teacher.

Potential benefits to the school and participants as a result of participation:
* It is envisaged that the findings from this project will enable a clearer picture to emerge for teachers about what personalizing learning looks when using an LMS like KnowledgeNET.
* Collaborating with teachers on the findings of the research could be used to develop a school wide programme for personalised learning.
* The benefits for student participants are that their learning would become more personalised which in turn may improve student engagement and learning capacity as lifelong learners.

Potential discomforts or risks to the school as a result of participation:
* Teachers who apply to participate in the research project, and are not chosen, may feel that they or their teaching practice is not of a high standard. Although this is a possibility, ensuring the teachers know the criteria for selection and that it is applied consistently should minimise this risk.
* The school may see the study as an evaluation of their ICT and e-learning practice which may impact the schools status as a lead school in this area. The teachers involved could also view the research project as an evaluation of their teaching practice which could make them uncomfortable. This could be increased by the fact that the researcher is in the leadership team and is responsible for e-learning and curriculum within the school. Although this is a possibility, the school ethos of 'Teaching as Inquiry', open-to-learning conversations and professional learning, would indicate that this would be viewed as an opportunity for growth and development by the school and teachers.
* The teachers and the school could also be worried that individual comments and practice might become known outside of the parameters of the research project. This will be addressed by assigning a code or alias, known only to the researcher, to participants. They will only be referred to by this code or alias in any conversations or publications.
* There is potential for intrusion and disruption of normal routines and additional stress resulting from research carried out during busy times in the term. The researcher would consult with teachers in establishing a timetable for interviews and observations that ensures minimal disruption to routine and that these occur at suitable times in the school term.
* No potential harm is envisaged for the students in the classes as they will continue to work as normal in their classroom and there will be minimal direct contact with the researcher. Their work within KnowledgeNET and the way the teacher sets the students up for working in the KnowledgeNET in the classroom will inform the research project.

Project Procedures:

In total, it is anticipated that teachers participants would be required to give 3 hours and 30 mins to the project over a term of the school year. These would take the form of:

- *Two Interviews* – Teachers will be interviewed individually and the interview will last for 30 minutes.
- *Three Observations* - 30 minute observations of 'normal' classroom programme – no interaction with researcher.
- *Final Debrief:* Teachers will be invited to participate in a 30 minutes conversation which is not included on the data.
- *Miscellaneous:* Teachers can choose to review interview transcripts and final summary with the researcher for up to 30 mins.

In addition the researcher would gather data from:

- *KnowledgeNET* – which involves the researcher collecting students' online work, teacher-student online conversations and reflections, and lessons and resources set up by the teacher. The aim is to explore what is happening in KnowledgeNET and how it is being used – in all areas of KnowledgeNET (School Zone, Class Zone and My Zone). This will occur concurrently with interviews and observations.

Data Management:

Access to Learning Management System:

The researcher in her current role at the school has administrative access to KnowledgeNET which includes all areas and all information in KnowledgeNET. The researcher will ensure that she consciously accesses and uses only the data of participants who have agreed to be in the project.

Anonymity of identity:

The researcher will ensure that information obtained is kept confidential and reported in a way that it cannot be directly connected to the participant. However, while every step will be taken by the researcher to maintain the anonymity of the school and participants, this cannot be guaranteed by the researcher. As staff will know that the project is being conducted and as there are only a small number of participants, it may be possible to identify who is involved. In addition, as the school uses KnowledgeNET in some unique ways that have been shared with parts of the educational community, it may be possible to identify the school where the research has taken place.

Use of data:

Data collected will be analysed and used to inform the basis of the thesis for the Master of Education. All data will be stored securely. Electronic data and paper-based data will be retained for a period of five years, after which it will be shredded.

Method for accessing a summary of the project findings:

At the completion of the research, all participants will be given a summary of the main findings as is the requirement of the code of ethics. In addition, key findings and summary will be shared via participation in professional learning groups or education conferences.

Participant's Rights:

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study by the 17th of May 2013
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;

- ask for the recorder to be turned off at any time during the interview or classroom observations
- be given access to a summary of the project findings when it is concluded.

Project Contacts:
<u>Researcher:</u>
Bronwyn Edmunds
<u>Supervisors:</u>
Dr Maggie Hartnett
Dr Kama Weir

"This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern B, Application 13/20. If you have any concerns about the conduct of the research, please contact Dr Nathan Matthews, Chair, Massey University Human Ethics Committee: Southern B, telephone 06 350 5799 x 80877, email <u>humanethicsouthb@massey.ac.nz</u>."

Appendix G : Teacher Participant Consent Form

Project Title: *Using an online Learning Management System (LMS) to personalise learning for primary school students.*

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree/ do not agree to the interview and classroom observations being sound recorded.

I wish/ do not wish to have my recordings returned to me.

I _____ agree, to participate in this study under the conditions set out in the *Teacher Participant Information Sheet.*

Teacher Signature:		**Date:**	
Teacher's Full Name - printed			

This Teacher Participant Consent Form needs to be returned to the researcher, Bronwyn Edmunds, before the study can commence.

Appendix H : Student Participant Information Sheet – Students

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

Project Title: *Using an online Learning Management System (LMS) to personalise learning for primary school students.*

My name is Bronwyn Edmunds and I usually work at Sunshine School working with teachers and students working with computers, laptops and ipads. This year, I am studying at Massey University.

I am going to give you information and invite you to be part of a research study that I am doing. You can choose whether or not you want to join in. I have also sent home some information about this research to your parents explaining that I am asking you to participate in the research. If you are going to take part, your parents also have to agree. But if you do not wish to take part in the research, you do not have to, even if your parents have agreed.

You may discuss anything on this information sheet with your parents or friends or anyone else you feel comfortable talking to. You can decide whether to participate or not after you have talked it over. You do not have to decide straight away. There may be some words you don't understand so please ask your parents or your teacher about what these words mean.

Why are we doing this research?
I am doing some research to find out about how teachers are using KnowledgeNET to help you with your learning. I want to get some ideas so that we can share these with other teachers so they can use websites like KnowledgeNET to help their students with learning.

Why are you asking me?
Your teacher has said that they would like to be a participant in the research and so I am also asking the students in their class, including you, to be a participant in the project. Across the school, 3 teachers and their classes will be involved.

Do I have to do this?
You don't have to be in this research if you don't want to be. It's up to you. If you decide not to be in the research, it's okay. When I come into you classroom to do observations you will go into another classroom with your schoolwork to work or you might go and work in the awhina space. Even if you say "yes" now, you can change your mind later and it's still okay.

What is going to happen if I am a participant in the research?

I will mostly be talking to and watching your teacher in class so that I can see what they are doing to help you with your learning and to see how they set you up to use KnowledgeNET. It would also mean that I would look on KnowledgeNET and see some of the things that you have been doing. I might look at your home area in KnowledgeNET which would include your Learning Journey area and your Learning Journal. I might also look at the class area to see what is happening here too.

Is this bad or dangerous for me?
No. But you might feel a bit funny about having me in your class and looking at your stuff on KnowledgeNET. Just remember that I am looking at your teacher and what they are doing but sometimes I have to look at what you are doing so that it matches what your teacher is saying. I won't need to talk to you about the research.

Is there anything good that happens to me?
Hopefully it will be just like every other day at school! Your learning might become better as your teacher picks up new ideas about how to make your learning better.

Is everybody going to know about this?
No. I am not allowed to tell anyone else about what specific people in the research project have said or done. Some of the things you have put up on KnowledgeNET may be used to show what I am talking about. If I do use some information from one person, I am not allowed to use their real name. I have to make up a fake name! A bit like Clark Kent and Superman!! Information about you that will be collected from the research will be put away and no-one but the researcher will be able to see it. Any information about you will have a fake name on it instead of your name. Only the researcher will know what your fake name is and I will lock that information up with a lock and key.

Will you tell me the results?
Yes! After the research has finished and I have put all of the information I have gathered together, a bit like a detective, then I will be able to share what I have learnt with you and your family. I will also be telling the teachers, the Principal, and some other people in education. But remember, I will never use your real name so other people will not know what you have said or done.

Can I choose not to be in the research? Can I change my mind?
You do not have to be in this research. No one will be mad or disappointed with you if you say no. It's your choice. You can say "yes" now and change your mind later and it will still be okay.

Who can I talk to or ask questions to?
You can ask me questions now or later. I will come into your class so that you can talk to me about the project. You can ask your teacher questions too. You should discuss this information with your parents and ask them questions if you are confused.

I will also give you a copy of this paper to keep for yourself.

What do I do if I want to be part of the research?
If you choose to be part of this research, you need to sign the consent form that I have sent to your parents. Your parents need to sign this form too. Then you need to return the form to the school office or your classroom teacher.

What do I do if I don't want to be part of the research?
If you don't want to be part of the research, your parents need to sign the consent form that I have sent to them. Then you need to return the form to the school office or your classroom teacher.

Appendix I : Letter – Invitation to parents of Possible Student Participants

Dear Parents and Caregivers,

I am currently on study leave to complete my Masters in Education, a key component of which is to complete a thesis. I have chosen to explore the way that KnowledgeNET can be used to personalise learning for students.

Your child's teacher has volunteered to be part of the research project and I am inviting your child to also be a participant in the project. Your child's involvement in the project will involve access to your child's area in KnowledgeNET by me and indirect observation of your child working in class, when I am observing their teacher. This won't involve any direct interaction between the myself and the student. Participation in the project is voluntary and you are at liberty to withdraw your child from the project at anytime.

Enclosed with this letter, you will find:

1. *Student Participant information Sheet – For Parents -* which describes the project, outlines the procedures to be used, discusses the potential benefits of participating in the research project, and addresses how potential risks will be minimised.
2. *Student Participant Consent Form – Parents Permission*

Should <u>you wish your child to participate</u> in the project conducted in your child's class at Sunshine School, please complete and sign this form, and return it to your child's teacher by the 17th of May.

Should <u>you not wish your child to participate</u> in this project, please indicate this on the consent form, sign this form and return it to your child's teacher by the 17th of May,

If you have any further questions you are welcome to contact myself or the supervisors as listed at the bottom of the information sheet.

Thank you for your support.

Kind regards,

Bronwyn Edmunds

Appendix J : Student Participant Information Sheet – For Parents

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

***Project Title:** Using an online Learning Management System (LMS) to personalise learning for primary school students.*

Researcher:
My name is Bronwyn Edmunds and I am the e-learning and curriculum Lead Teacher at Sunshine School. This year I am on study leave and I am working on a thesis as part of my Master degree at Massey University. The thesis will explore the use of a Learning Management System (LMS), such as KnowledgeNET, to personalise learning for students in a primary school. Dr Maggie Hartnett and Dr Kama Weir, both experienced researchers themselves, will be supervising me throughout the research project.

Project Description:
The research project will focus on 3 teachers who are using KnowledgeNET to support the learning of their students. Data collection will begin at the middle of Term 2 (20/05/2013) and run until the middle of Term 3 (30/08/2013). KnowledgeNET is one type of learning management system endorsed by the Ministry of Education and used by many schools in New Zealand, including Sunshine School. A Learning Management System (LMS) is loosely defined as a secure online space of software tools and digital online content used to support learning and assessment.

Aims of the Research Project:
The project aims to examine and describe how primary teachers are utilising KnowledgeNET to facilitate personalised learning, identifying some common features for effective use of KnowledgeNET, linking personalised learning theory and practice. The key idea is to explore how KnowledgeNET is being used; it is not about judging quality of practice.

Your child's teacher has volunteered to take part in the research project and I am inviting your child to also be a participant in the project. This won't involve any direct interaction between the researcher and the student.

Participant Information:
Number of participants to be involved:
The intended participants are 3 teachers who use KnowledgeNET to support students learning. The students in the classes of these teachers are also being invited to participate. Your child's work within KnowledgeNET and the way the teacher sets the students up for working in KnowledgeNET in the classroom will also inform the research project. The focus is on the classroom teacher, not on the students.

Students who are not taking part in the research will not be included in any of the data. The teacher will ensure that these students are working in another classroom or the awhina space on set schoolwork at the time of the observations.

Potential benefits to student participants as a result of participation:
- The benefits for students is that their learning could become more personalised which in turn may improve student engagement and learning capacity.

Potential discomforts or risks to student participants as a result of participation:

- There is potential for disruption of normal routines. However, the researcher would consult with teachers in establishing a timetable for observations that ensures minimal disruption of routine. The researcher will also discuss the project with students so that they understand the purpose and focus of the project.
- No potential harm is envisaged for the students in the classes as they will continue to work as normal in their classroom and there will be minimal direct contact with the researcher. Their work within KnowledgeNET and the way the teacher sets the students up for working in the KnowledgeNET in the classroom will inform the research project.

Project Procedures:

The students would be involved in:

- *Observations* - which are three 30 minute observations of the 'normal' classroom programme. The focus is on how the teacher sets up and supports the students for working in KnowledgeNET.
- *KnowledgeNET* – which involves the researcher collecting students' online work, teacher-student online conversations and reflections, and lessons and resources set up by the teacher. The aim is to explore what is happening in KnowledgeNET and how it is being used – in all areas of KnowledgeNET (School Zone, Class Zone and My Zone).

Please Note: The researcher in her current teaching role at the school has administrative access to KnowledgeNET which includes all areas and all information in KnowledgeNET. The researcher will ensure that she consciously accesses and uses only the data of participants who have agreed to be in the project.

Use of data:

Data collected will be analysed and used to inform the basis of the thesis for the Master of Education. All data will be stored securely. Electronic data and paper-based data will be retained for a period of five years, after which it will be shredded.

Method for accessing a summary of the project findings:

At the completion of the research, all participants will be given a summary of the main findings as is the requirement of the code of ethics. In addition, key findings and summary will be shared via participation in professional learning groups or education conferences.

Anonymity of identity:

The researcher will ensure that information obtained is kept confidential and reported in a way that cannot be directly connected to the participant. However, while every step will be taken by the researcher to maintain the anonymity of the school and participants, this cannot be guaranteed by the researcher. Students will be more likely to remain anonymous as they will rarely be referred to directly. However, some data from KnowledgeNET, specific to a particular student, may be used to provide evidence of findings. In these instances, an alias will be used to ensure that the data is not identifiable to a specific student.

Participant's Rights:

You are under no obligation to accept this invitation on behalf of your child. If you decide to allow your child to participate, you have the right to:

- withdraw from the study by the 7th of June 2013
- ask any questions about the study at any time during participation;
- provide information on the understanding that your child's name will not be used;
- be given access to a summary of the project findings when it is concluded

Project Contacts:
<u>Researcher:</u>
Bronwyn Edmunds

<u>Supervisors:</u>
Dr Maggie Hartnett
Dr Kama Weir

Appendix K : Student Participant Consent Form – Parents/ Caregiver Permission

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

**Project Title:** _Using an online Learning Management System (LMS) to personalise learning for primary school students._

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree/do not agree for my child, _____, to participate in this study under the conditions set out in the Information Sheet.

I agree/ do not agree to the observations being sound recorded as part of the in-class observations.

I agree/do not agree for the researcher, Bronwyn Edmunds, to access my child's area in KnowledgeNET.

I have discussed this study with my child and have read the Student Information Sheet through with them.

Parent Signature:		**Date:**
Parent's Full Name - printed		
Name of Child:		
Name of Teacher:		

Student Participant Consent Form – Student Permission

I have discussed the Information Sheet with my parents and have the research project explained to me.

I agree to participate in this research as it has been explained to me.

Student Signature:		**Date:**
Parent's Full Name - printed		

This Student Participant Consent Form needs to be returned to the researcher, Bronwyn Edmunds, before the research can commence.

Appendix L : Data Source Codes

Data Collection Tool	Date	Reference
Teacher One – Chris – Data Collection		
Interview One	30th May 2013	CMayInt1
Observation One - Writing	8th July 2013	CJulyOb1
Documentary Information – LMS One	8th - 14th July 2013	CJulyLMS1
Observation Two - Reading	5th August 2013	CAugOb2
Documentary Information – LMS Two	5th – 11th August 2013	CAugLMS2
Observation Three - Maths	28th August 2013	CAugOb3
Documentary Information – LMS Three	26th – 31st August 2013	CAugLMS3
Interview Two	19th September 2013	CSepInt2

Data Collection Tool	Date	Reference
Teacher Two – Lucie – Data Collection		
Interview One	30th May 2013	LMayInt1
Observation One - Reading	9th July 2013	LJulyOb1
Documentary Information – LMS One	8th - 14th July 2013	LJulyLMS1
Observation Two - Reading	5th August 2013	LAugOb2
Documentary Information – LMS Two	5th – 11th August 2013	LAugLMS2
Observation Three - Reading	28th August 2013	LAugOb3
Documentary Information – LMS Three	26th – 31st August 2013	LAugLMS3
Interview Two	18th September 2013	LSepInt2

Data Collection Tool	Date	Reference
Teacher Three – Yvonne – Data Collection		
Interview One	29th May 2013	YMayInt1
Observation One - Writing	4th July 2013	YJulyOb1
Documentary Information – LMS One	1st – 7th July 2013	YJulyLMS1
Observation Two - Reading	31st July 2013	YJulyOb2
Documentary Information – LMS Two	29th July – 2nd August 2013	YJulyLMS2
Observation Three - Maths	28th August 2013	YAugOb3
Documentary Information – LMS Three	26th – 31st August 2013	YAugLMS3
Interview Two	18th September 2013	YSepInt2

Appendix M : Semi-Structured Interview Schedule

Project Title: Using an online Learning Management System (LMS) to personalise learning for primary students.

1. Put the interviewee at ease; general chat
2. State the overall purpose and how it will be used
    a. The purpose of this research project is to explore personalised learning and how a Learning Management System (LMS) in a primary school could be used to facilitate it.
    b. The data gathered will be analysed to identify some common features for effective use of the LMS, linking personalised learning theory and practice.
3. Establish that they have the right to decline to answer any question
4. Assure about confidentiality
5. Seek permission for taping
6. Indicate the security of the data and who has access
7. Say when and where the summary information will be available

Questions for Interview

Theory-related Questions:

1. What does personalised learning mean to you?
2. How do you think it differs from individualised learning?
3. Many researchers say that a Learning Management System, such as KnowledgeNET, when used to its full potential, can personalise learning for students. What do you think?

Practice- related Questions:

1. Tell me about how you incorporate KnowledgeNET into your classroom practice- the day-to-day reality?
2. Do you think that you use KnowledgeNET to personalise learning for your students?
3. If so, how do you use KnowledgeNET to facilitate personalised learning? What does that look like?
4. If not, for what purpose do you use KnowledgeNET? What does that look like?
5. Are there any other strategies you would like to try to personalise learning for your students?
6. What advice would you give a teacher who wanted to try to personalise learning for their students using KnowledgeNET?

Other Questions:

1. What else would you like to share about KnowledgeNET and personalised learning?

End of Interview

- Reiterate the purpose of the data collecting
- Reiterate when and where the summary of the research information will be available

Appendix N : Authority for the Release of Transcripts

Project Title: Using an online Learning Management System (LMS) to personalise learning for primary school students.

I confirm that I have had the opportunity to read and amend the transcript of the interview(s) conducted with me.

I agree that the edited transcript and extracts from this may be used in reports and publications arising from the research.

Signature: Date:

Full Name - printed

Appendix O : Transcriber's Confidentiality Agreement

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

Project Title: Using an online Learning Management System (LMS) to personalise learning for primary school students.

I ……………………………………………………………….(Full Name - printed) agree to transcribe the recordings provided to me.

I agree to keep confidential all the information provided to me.

I will not make any copies of the transcripts or keep any record of them, other than those required for the project.

Signature: Date:

Appendix P : Semi-Structured Interview Schedule – Interview 2

Project Title: Using an online Learning Management System (LMS) to personalise learning for primary students.

1. Put the interviewee at ease; general chat
2. State the overall purpose and how it will be used
   a. The purpose of this research project is to explore personalised learning and how a Learning Management System (LMS) in a primary school could be used to facilitate it.
   b. The data gathered will be analysed to identify some common features for effective use of the LMS, linking personalised learning theory and practice.
3. Establish that they have the right to decline to answer any question
4. Assure about confidentiality
5. Seek permission for taping
6. Indicate the security of the data and who has access
7. Say when and where the summary information will be available

Questions for Interview

Personalising learning questions:

1. At the last interview, you said that your key beliefs about personalising learning were ...... Have you made any changes to your thoughts about personalising learning since we last spoke?
2. Have you made any changes to your classroom practice in regards to personalising learning for students since we last spoke - middle of Term 2?
3. Could you tell me more about that.......
4. In your opinion, what benefits could be gained by students in having their learning personalised?
5. Would this also apply to the use of KN to personalise learning? In what way?
6. In your opinion, what restrictions can students experience when their learning personalised?
7. Would this also apply to the use of KN to personalise learning? In what way?

Assessment for Learning related Questions:

1. Do you think Assessment for Learning principles and practice has a place in personalising learning for students?
2. If so, what place to they have?
3. If not, why do you think this?
4. Tell me about Assessment for Learning in your classroom.
5. The use of KN to share goals, show evidence and reflect on progress has come through strongly in your last interview and the observations, within which there are a lot of skills and understanding that students need to have, how do you bring this into the classroom?
6. How do you feel about the time this takes away from core teaching and learning?

Curriculum Entitlement and choice Questions:

1. Curriculum entitlement and choice is believed to be on aspect of PL, what does that phrase mean to you?
2. Tell me about Curriculum entitlement and choice in your classroom.
   - What limits this?

- What supports this?
3. Ownership of learning versus content choice – what do you think?

Strong Partnership Questions:

1. Strong Partnerships are believed to be on aspect of PL, what does that phrase mean to you?
2. Tell me about Strong Partnerships in your classroom.
3. What limits this?
4. What enhances this?

Personalising learning and KN questions:

5. What do you see as the overall purpose of KN in a school?
6. What do you see as the role of teachers in KN?
7. What do you see as the role of students in KN?
8. What do you see as the role of parents / caregivers in KN?
9. How is KN used as part of your targeted teaching – ie when working with groups?
10. How do goals reflection and evidence make it into KN?
11. What do you see as the benefits of using KN to personalise learning for students?
12. What do you see as the limitations of using KN to personalise learning for students?
13. How often would you use KN to inform planning for teaching and learning? In what ways?
14. How do you monitor use in KnowledgeNET?
15. How much teaching time do you think gets used with KN basics – how to add a comment, a goal etc?

Other Questions:

1. Now that you have been through this process, have you thought about what you would do next in the classroom in your personalising learning journey?
2. What else would you like to share about KnowledgeNET and personalised learning?

End of Interview

- Reiterate the purpose of the data collecting
- Reiterate when and where the summary of the research information will be available

Appendix Q : Personalising Learning Framework

Name of Teacher: _____   Date: _____

Components	Points to consider:	Evidence
Personalising learning component 1: Assessment for learning		
Student focused learning	Talk about learning Why? Where they are at	
Student Learning	Learning Linked to student needs Intentions Ongoing monitoring Success Criteria Linked to Learning Experiences	
Assessment / reflection Control	Teacher Student (self) Teacher/ student Student / Student (peer)	
Assessment Purpose	Inform learning Summative Authentic	
Feedback/ forward – next steps, strengths	Teacher Student Teacher/ Student/ student student	
Reflection – justify, answer, explain	Individual Group Class	
Learning Goals and Next Steps	Individual Group Class	
Other		
Personalising learning component 2: Curriculum entitlement and choice		
Ownership of learning	Teacher Student Teacher/ student	
Learning Pathway	Choice Variety Differentiation	
Relevance of learning	Prior learning Student interests Student strengths	
Knowledge	Transmitted Co-constructed	
Learning Context	Purposeful Authentic Coverage	
Resources	Purposeful Authentic Type	
Other		

Personalising learning component 3: Effective teaching and learning			
Instructional strategies	Telling Modelling Explaining Giving Feedback Prompting	Questioning Discussion debate Thinking Time Reflecting	
Teaching Strategies	Direct instruction Student-directed Conferencing Collaboration	Facilitation Inquiry Contacts Teaching others Mentoring	
Engagement of students	Enthusiasm Interest	Confidence Keep pace	
Depth of Learning / thinking	Remembering Understand Applying	Analysing Evaluating Creating	
Learning Tasks	Open-ended Closed	Combination Flexible	
Grouping	Whole class Small group	Partners Individual	
Locus of control	Teacher Teacher/ student	Student Student / student	
Lesson Sequence	One-off lesson Sequenced lesson		
Dialogue	Learning focused Control	Participation Opportunity	
Other			
Personalising learning component 4: Strong partnerships			
Parent Involvement	Active Passive		
Parent Dialogue focus	Learning Information Behaviour		
Classroom and Community Involvement	Active Passive Level		
Other			
Additional Comments:			